of California School
APR 5 1919
LIBRARY

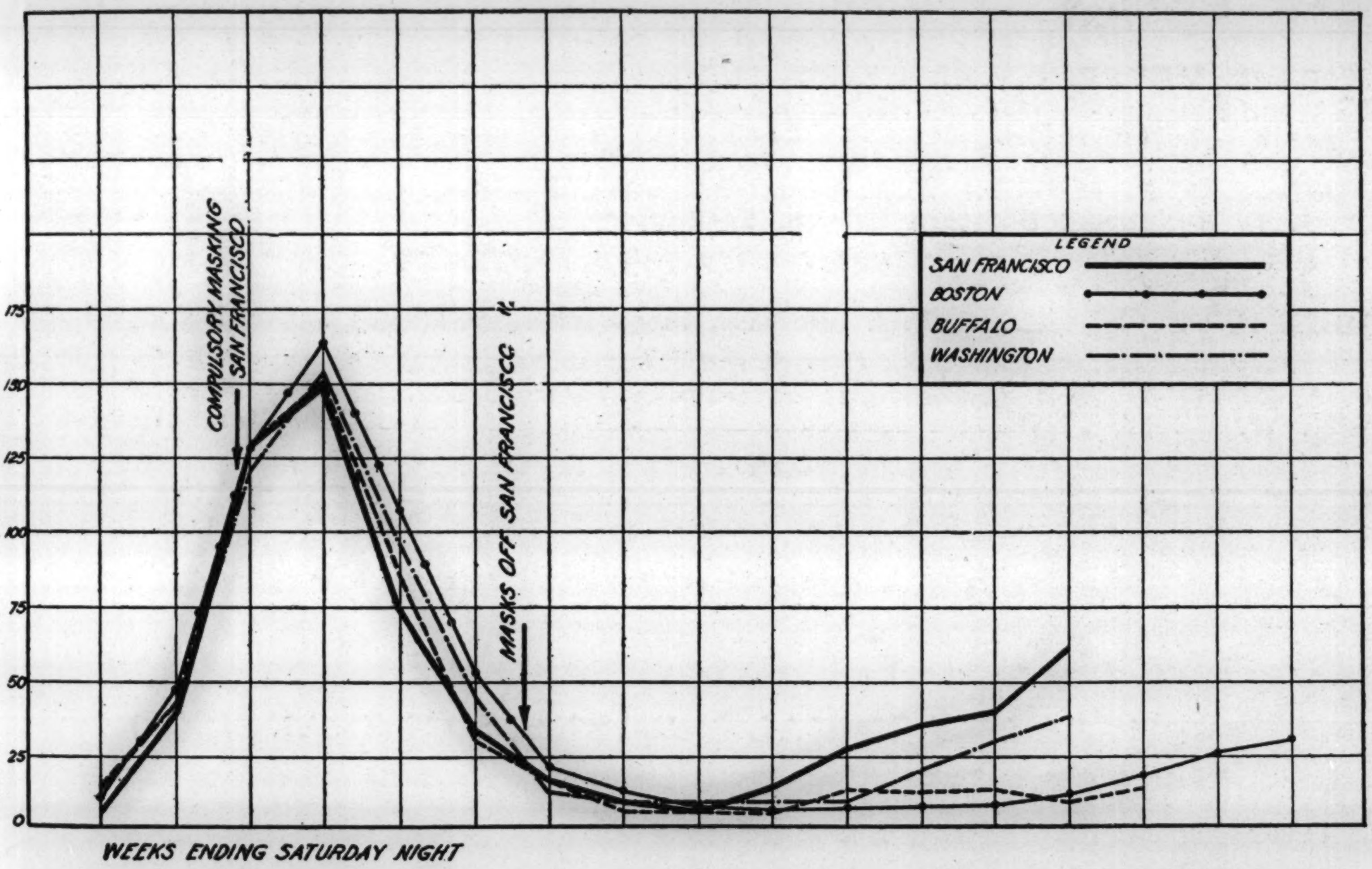
NOTICE TO READER

When you finish reading this magazine, place a 1-cent stamp on this notice, mail the magazine, and it will be placed in the hands of our soldiers or sailors destined to proceed over-seas.

No wrapping—No address. A. S. BURLESON,
Postmaster-General.

CALIFORNIA STATE BOARD OF HEALTH

MONTHLY BULLETIN



Influenza and pneumonia death rates per 100,000 population, by weeks, for San Francisco, Boston, Buffalo and Washington. In San Francisco not only were public gatherings prohibited but the use of the face mask was made compulsory. In Boston, public gatherings were prohibited after the epidemic was well on its way. In Buffalo, measures for closing were adopted and the use of the mask was advised. In Washington, public gatherings were prohibited before a dozen cases had appeared.

¶ THE INFLUENZA EPIDEMIC

¶ JANUARY, 1919

California State Board of Health

MEMBERSHIP OF THE BOARD

GEORGE E. EBRIGHT, M.D., President	San Francisco
FRED F. GUNDRUM, M.D., Vice President	Sacramento
WILFRED H. KELLOGG, M.D., Secretary, Executive Officer	Sacramento
WM. LEMOYNE WILLS, M.D.	Los Angeles
EDWARD F. GLASER, M.D.	San Francisco
ADELAIDE BROWN, M.D.	San Francisco
ROBERT A. PEERS, M.D.	Colfax

BUREAU OF ADMINISTRATION, SACRAMENTO

WILFRED H. KELLOGG, M.D.	**Secretary and Executive Officer, DIRECTOR**
GUY P. JONES	Assistant to the Secretary
KEMPER B. CAMPBELL, LL.M., Los Angeles	Attorney
EDWARD T. ROSS	Sanitary Inspector

DISTRICT HEALTH OFFICERS

ALLEN F. GILLIHAN, M.D.	**North Coast District, Santa Rosa**
HAROLD F. GRAY, M.S., Gr.P.H.	Northern District, Chico
ROBERT N. HOYT, S.B. (on leave, in government service)	Central Coast District, San Jose
RALPH W. NAUSS, M.D., Dr.P.H.	**Central District, Fresno**
GAVIN J. TELFER, M.D.	South Coast District, Los Angeles

BUREAU OF COMMUNICABLE DISEASES, BERKELEY.

FRANK L. KELLY, M.D., Gr.P.H.	**Acting DIRECTOR**

DIVISION OF THE HYGIENIC LABORATORY

KARL F. MEYER, D.V.M.	**Consulting Bacteriologist**
IDA M. STEVENS, M.A. (P.H.)	Bacteriologist
GRACE A. MACMILLAN	**Bacteriologist**
ESCHSCHOLTZIA LICHTHARDT, B.A.	Bacteriologist
VIOLET M. BATHGATE, M.S., Southern Branch, Los Angeles	**Bacteriologist**
MRS. L. RAMSEY, Northern Branch, Sacramento	**Bacteriologist**

DIVISION OF EPIDEMIOLOGY

FRANK L. KELLY, M.D., Gr.P.H.	Epidemiologist
JOHN N. FORCE, M.D., Gr.P.H. (on leave, in government service)	Consulting Epidemiologist

DIVISION OF PARASITOLOGY

C. A. KOFOID, Ph.D. (on leave, in government service)	Consulting Parasitologist
WM. W. CORT, Ph.D.	Consulting Helminthologist

DIVISION OF ENTOMOLOGY

WM. B. HERMS, M.S. (on leave, in government service)	Consulting Entomologist
STANLEY B. FREEBORN, M.S. (on leave, in gov't service)	Acting Consulting Entomologist

BUREAU OF TUBERCULOSIS, SACRAMENTO

E. L. M. TATE-THOMPSON, B.L.	**DIRECTOR**
LINDA MITSCHKE, R.N.	**Field Worker**

BUREAU OF SOCIAL HYGIENE, SAN FRANCISCO

LEWIS MICHELSON, M. D.	**DIRECTOR**
ETHEL M. WATTERS, M.D.	**Sanitarian**
WALTER M. DICKIE, M.D., Los Angeles	**Sanitarian**

BUREAU OF VITAL STATISTICS, SACRAMENTO

GEORGE D. LESLIE, Ph.B.	**State Registrar and DIRECTOR**
EDNA A. MORTON	**Deputy Statistician**

BUREAU OF SANITARY ENGINEERING, BERKELEY

CHESTER G. GILLESPIE, C.E.	**Chief Engineer and DIRECTOR**
RALPH HILSCHER, C.E.	Assistant Engineer, in Charge Southern Branch
FRANK BACHMANN, B.S.	Chemist and Bacteriologist
CLYDE F. SMITH, C.E.	Assistant Engineer
RAY F. GOUDEY, C.E.	Assistant Engineer

BUREAU OF FOODS AND DRUGS, BERKELEY

ERWIN J. LEA, M.S.	**DIRECTOR**
MYER E. JAFFA, M.S.	**Consulting Nutrition Expert**
AUGUST F. GLAIVE, Ph.C.	**Assistant to the Director and Chemist**
C. H. McCHARLES, M.S.	**Chemist**
L. C. CHANDLER, M.D.	**Chemist**
MAY L. DONALD	**Bacteriologist**

BUREAU OF REGISTRATION OF NURSES, SACRAMENTO

ANNA C. JAMME, R.N.	DIRECTOR
LAURA M. GRANT, R.N.	Acting Director
KATE S. DOUGLAS, R.N.	Assistant Inspector, Training Schools

CALIFORNIA STATE BOARD OF HEALTH

MONTHLY BULLETIN

Vol. 14 JANUARY, 1919 No. 7

TABLE OF CONTENTS.

PAGE

EDITORIALS—Nursing and Medical Services Supplied—Protect Others from your Cold—Clean Handkerchiefs Better than Disinfected Streets—Common Sense in Control of Influenza—Many Suggestions for Control of Influenza........221–222

DISTRIBUTION OF INFLUENZA CASES IN SACRAMENTO........225

THE INFLUENZA EPIDEMIC, by W. H. Kellogg, M.D., Secretary California State Board of Health........226

SANITARY INSPECTIONS IN SAN FRANCISCO BAY REGION, Report of the Bureau of Administration for November, 1918, W. H. Kellogg, M.D., Director 248

INVESTIGATION OF PARASITICAL DISEASES IN THE DELTA REGION, Report of the Bureau of Communicable Diseases for November, 1918, Frank L. Kelly, M.D., Gr. P.H., Director........250

MIGRATORY INDIGENT "CONSUMPTIVE," A REAL PROBLEM, Report of Bureau of Tuberculosis for November, 1918, E. L. M. Thompson, Director........253

REPORT OF THE BUREAU OF SOCIAL HYGIENE FOR NOVEMBER, by Lewis Michelson, M.D., Director........254

NOVEMBER VITAL STATISTICS, Report of the Bureau of Vital Statistics, George D. Leslie, Director........255

MANY SEWAGE DISPOSAL PLANS FILED, Report of the Bureau of Sanitary Engineering for November, 1918, C. G. Gillespie, C.E., Director........258

LARGE NUMBER OF FOOD SAMPLES EXAMINED, Report of the Bureau of Foods and Drugs for November, 1918, E. J. Lea, M.S., Director........264

INFLUENZA AND NURSING FACILITIES, Report of the Bureau of Registration of Nurses, Laura M. Grant, Acting Director........265

LIST OF CITY AND COUNTY HEALTH OFFICERS........266

43499

MONTHLY BULLETIN
CALIFORNIA STATE BOARD OF HEALTH

Devoted to the Prevention of Sickness and Death

Entered as second-class matter, August 15, 1905, at the post office at Sacramento, California, under the Act of Congress of July 16, 1894. Acceptance for mailing at the special rate of postage provided for in Section 1103, Act of October 3, 1917, authorized August 27, 1918.

Sent free, on request, to any citizen of California.

WILFRED H. KELLOGG, M.D., Secretary and Executive Officer . Editor
GUY P. JONES, Assistant to the Secretary . . Associate Editor

Nursing and Medical Services Supplied. During October, November and December the California State Board of Health, in co-operation with the American Red Cross and the United States Public Health Service, supplied medical and nursing services to many communities where acute emergencies existed because of influenza. One hundred and eighty nurses and sixty-two physicians were sent during these months to the following towns: Arcadia, Angels Camp, Antioch, Atolia, Arroyo Grande, Baden, Blythe, Bray, Benicia, Burlingame, Camptonville, Casmalia, Chula Vista, Centerville, Calistoga, Clipper Gap, Coachella, Corcoran, Crockett, Dorris, Dunsmuir, Firebaugh, Fort Bragg, Forest Hill, Fairfield, Guadalupe, Grass Valley, Gilroy, Gerber, Hanford, Hollister, Hercules, Hornbrook, Hilt, Hayward, Indio, Kennett, Lincoln, Livermore, Lovelock, Lemon Cove, Los Molinos, Los Angeles, Merced, Merced Falls, McCloud, Martinez, Madera, Napa, Needles, New Idria, Nevada City, Oakland, Oleum, Paxton, Patterson, Pittsburg, Penryn, Pinole, Port Costa, Richmond, Redwood City, Roseville, Rodeo, Soledad, San Francisco, South San Francisco, San Jose, Santa Barbara, Santa Maria, Sierra City, Salinas, San Rafael, Santa Rosa, Stockton, San Luis Obispo, Turlock, Thermal, Tres Pinos, Ukiah, Vacaville, Weed, Willits, Ione, Los Alamos, Cambria, and Forrest.

* * *

Protect Others From Your Cold. Since the diagnosis of influenza is frequently very uncertain and can not be confirmed by bacteriological methods, public health men place great importance upon the necessity for voluntary isolation of every person suffering from common colds. Many common colds are undoubtedly light cases of influenza, and many severe cases of the disease have been contracted through contact with persons suffering from what appeared to be common colds. Since relatively few of these colds are ever seen by physicians or health officers, it is important that every individual with a cold be advised of his obligation in protecting other persons from coming into contact with him. This is undoubtedly the most important single measure for the control of influenza that has yet been offered. Its enforcement depends upon the realization of the individual as to his personal responsibility.

Clean Handkerchiefs Better Than Disinfected Streets. In one California city during the influenza outbreak the streets were treated with a disinfectant solution bearing a trade name. The use of this solution was suggested by the village constable who is the agent for the product and who offered a free sample for trial upon the streets of the village. Later, he supplied large quantities of the product, at cost, and it was added to the tanks of water used for sprinkling the streets. In commenting upon this, the town newspaper added, "We are now fully trained in methods of self-protection, and practicing them will prevent any serious outbreak." Following this sprinkling of the streets with the disinfectant, however, more cases of influenza developed than had appeared at any time before.

* * *

Common Sense in Control of Influenza. Influenza travels no faster than man travels, and the only known factor in the transmission of the disease is man. If people would only forget the inanimate objects that do not come into close contact with human beings, much misdirected energy might be diverted to useful purposes. The common drinking cup, improperly washed eating utensils, careless talking in another's face, sneezing, coughing and similar practices, are undoubtedly of great importance in the spread of the disease. Washing the streets, sprinkling sheep dip on factory floors and such practices have no bearing upon preventing the spread of influenza.

* * *

Many Suggestions for Control of Influenza. These are a few of the suggestions made to the State Board of Health for the control of influenza:

1. Use perfume in unlimited quantities.
2. Smoke cubebs.
3. Coal oil—internally and externally.
4. Shake sulphur in the shoes.
5. Hang assafœtida around the neck.
6. Sprinkle sheep dip on the streets.
7. Flood streets with salt water.
8. Use Epsom salts, sugar and water, made into a syrup, used as mouth wash; daily bath in Epsom salts solution; teaspoonful of Epsom salts in pint hot water every morning.
9. Use vaseline internally.
10. Put electric power companies out of business, as stray electric currents are responsible for influenza.
11. Discharge electric current into sewers through manholes to kill influenza germs in sewers.
12. Remove poison gases released on Western Front during the war as the earth passes through the poison gas belt every 24 hours, which causes influenza.
13. Remove the dead bodies from the battle fields of Europe, as their putrefaction causes influenza.

Influenza in Sacramento, October and November, 1918.

	October	November	Total
1. Influenza, active cases	2,387	1,231	3,618
2. Influenza cases not reported to Health Department (deaths)			378
3 Total			3,996
Deaths—			
Influenza	33	28	61
Influenza and pneumonia	100	262	362
Influenza and tuberculosis	2	8	10
Pneumonia	31	31	62
Pneumonia and tuberculosis	1	0	1
Influenza and pregnancy	0	2	2
Stillborn, due to influenza in mother	2	2	4
Premature, due to influenza in mother	0	3	3
Inactive, due to influenza in mother	0	1	1
Totals	169	337	506
Tuberculosis	14	17	31
Race—			
White	105	213	318
Austrian	6	6	12
Japanese	15	30	45
Chinese	0	4	4
Portuguese	10	19	29
Greek	5	7	12
Hindu	2	4	6
Italian	15	26	41
Mexican	9	21	30
Russian Polish	1	3	4
Serbian	1	0	1
Colored	0	4	4
Totals	169	337	506
Residence—			
In city	106	187	293
Out of city, but in state	29	56	85
Transient	19	57	76
Unknown and open air	9	30	39
Jail	6	7	13
Totals	169	337	506
Died in hospital (influenza, pneumonia and tuberculosis)	80	177	257
In hospital—1 hour to 1 day	23	38	61
In hospital—2 to 3 days	22	37	59
In hospital—over 3 days	35	102	137
Coroner's cases	11	14	25
Cases seen by physician—1 day only	16	30	46
Cases seen by physician—2 days only	6	11	17

Spot map, showing location of cases of influenza occurring in Sacramento, October and November, 1918, as well as the location of reported cases of tuberculosis. White spots indicate influenza cases; black spots, influenza deaths; and stars, tuberculosis cases.

DISTRIBUTION OF INFLUENZA CASES IN SACRAMENTO.

A study of the possible relationship of tuberculosis to influenza has been made by the Bureau of Tuberculosis. Miss Linda Mitschke, field worker of the bureau, has prepared a spot map, showing the location of tuberculosis and influenza cases in the city of Sacramento, a reproduction of which is shown on the opposite page. While the investigation brought out no startling facts in establishing a definite relationship between the two diseases, it proved of value in demonstrating the fact that influenza was very much more prevalent, at first, in the thickly populated district of the city, near the water front. Mortality rates, also, were higher in this district. The city health department and the Sacramento Society for the Study and Prevention of Tuberculosis, contributed the data upon which the work is based. On a preceding page is a statistical summary of influenza in Sacramento during October and November.

THE INFLUENZA EPIDEMIC.

WITH SUMMARY OF CONCLUSIONS REACHED AS A RESULT OF THE STUDY OF THE CONTROL MEASURES ADOPTED.

By W. H. KELLOGG, M.D.,

Secretary and Executive Officer of the California State Board of Health.

It is intended in this article to discuss, in the light of the available data from all parts of the country, various measures that have been put into effect for the control of influenza.

As the State Board of Health, with its bureaus of Communicable Disease, of Epidemiology and of Vital Statistics, is in a position to have a much more comprehensive view of the situation than is possible for the strictly local health department, it is believed the discussion and conclusions herewith set forth will be of interest and assistance to all health officers.

From the first appearance of influenza (in the present pandemic) in the United States, at Chelsea, Massachusetts, August 28, 1918, its progress has been rapid. The first cases in California were reported during the week ending September 21, at the following places: Dunsmuir one case, Los Angeles three cases, San Francisco six cases, Arroyo Grande sixteen cases, and Modesto five cases. Progress was most rapid in Dunsmuir, one hundred and nine cases being reported for the week ending October 5. The popular alarm and demand for action was so great that the counsel of trained epidemiologists was thrown to the winds, and, goaded by the clamor of lay sanitarians, both medical and nonmedical, health officers applied the most varied and empirical assortment of measures for the control of the epidemic. One of the most popular measures, the gauze mask, has been widely adopted in California, several cities passing ordinances requiring its universal use. Hoping to stamp out the epidemic some towns flushed the streets with water, some claiming virtue in salt water, and others being content with fresh; other used sheep dip in the water; a slightly colored solution of permanganate of potash was used in some localities to splash upon the floors of public places. Churches, schools and theaters were closed in some communities, *but so far as known no saloons were closed, except upon the order of the State Board of Health.*

In reference to the measures used it must be understood that no criticism is being levelled at any person or city for any measure that may have been enforced.

Influenza and Pneumonia Death Rates per 100,000 Population, by Weeks, Eastern Cities.

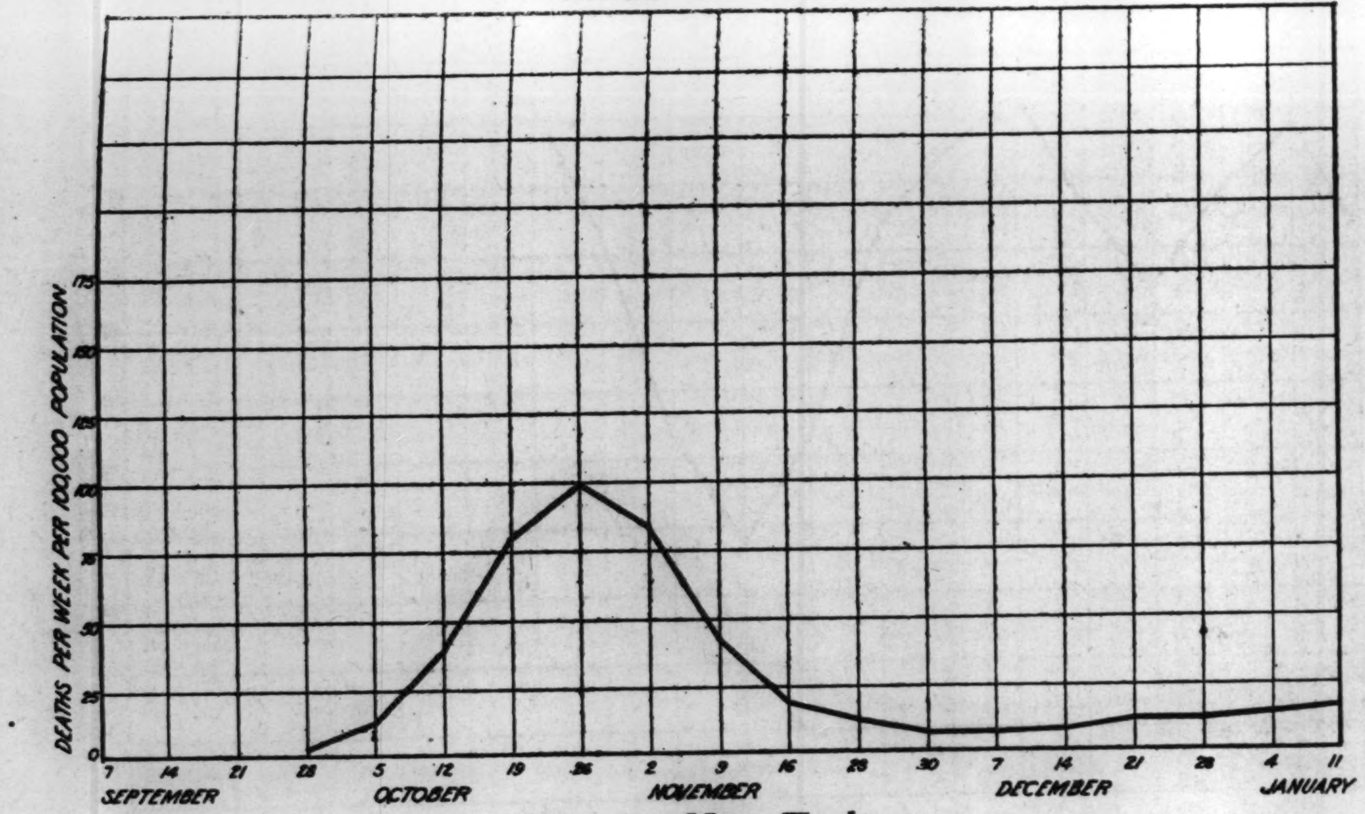


FIG. 1. New York.

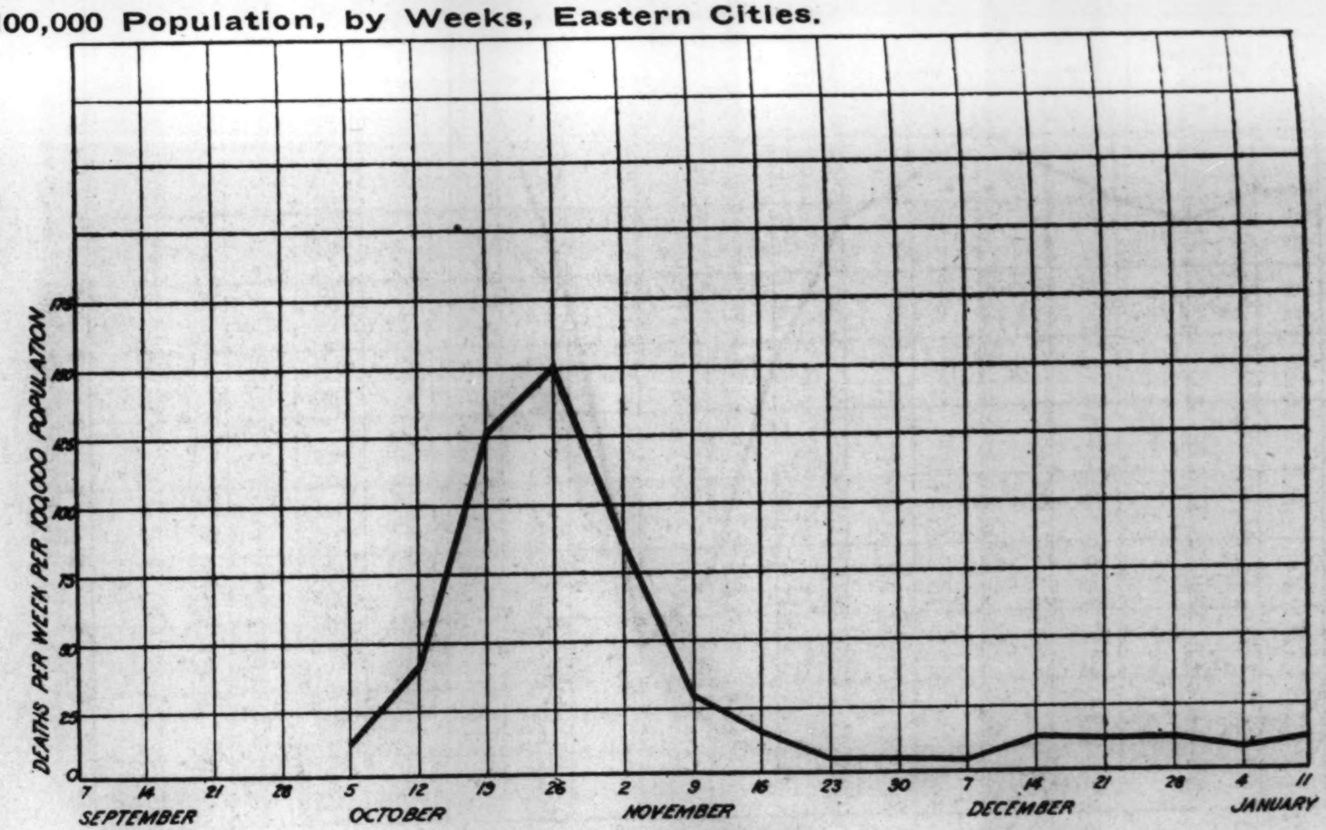


FIG. 2. Buffalo.

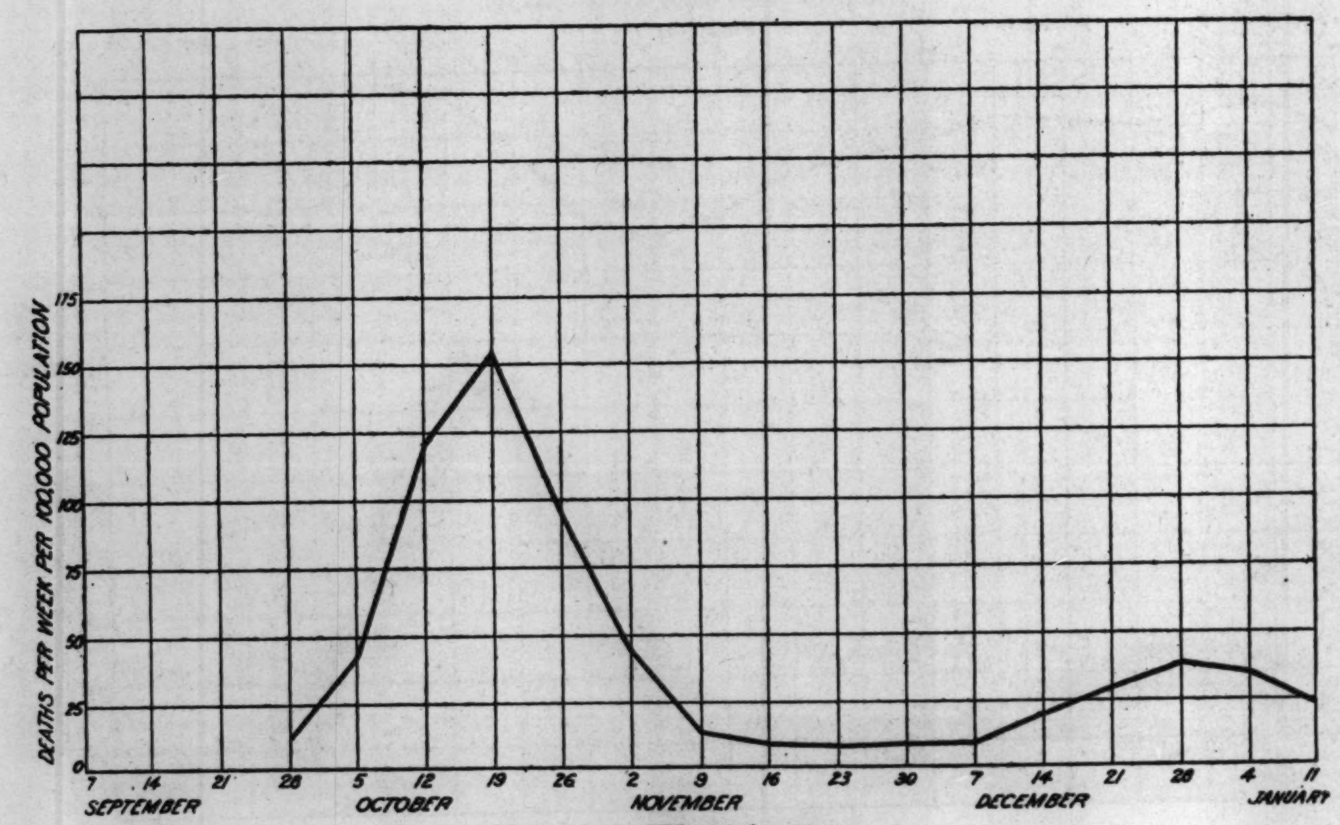


FIG. 3. Washington.

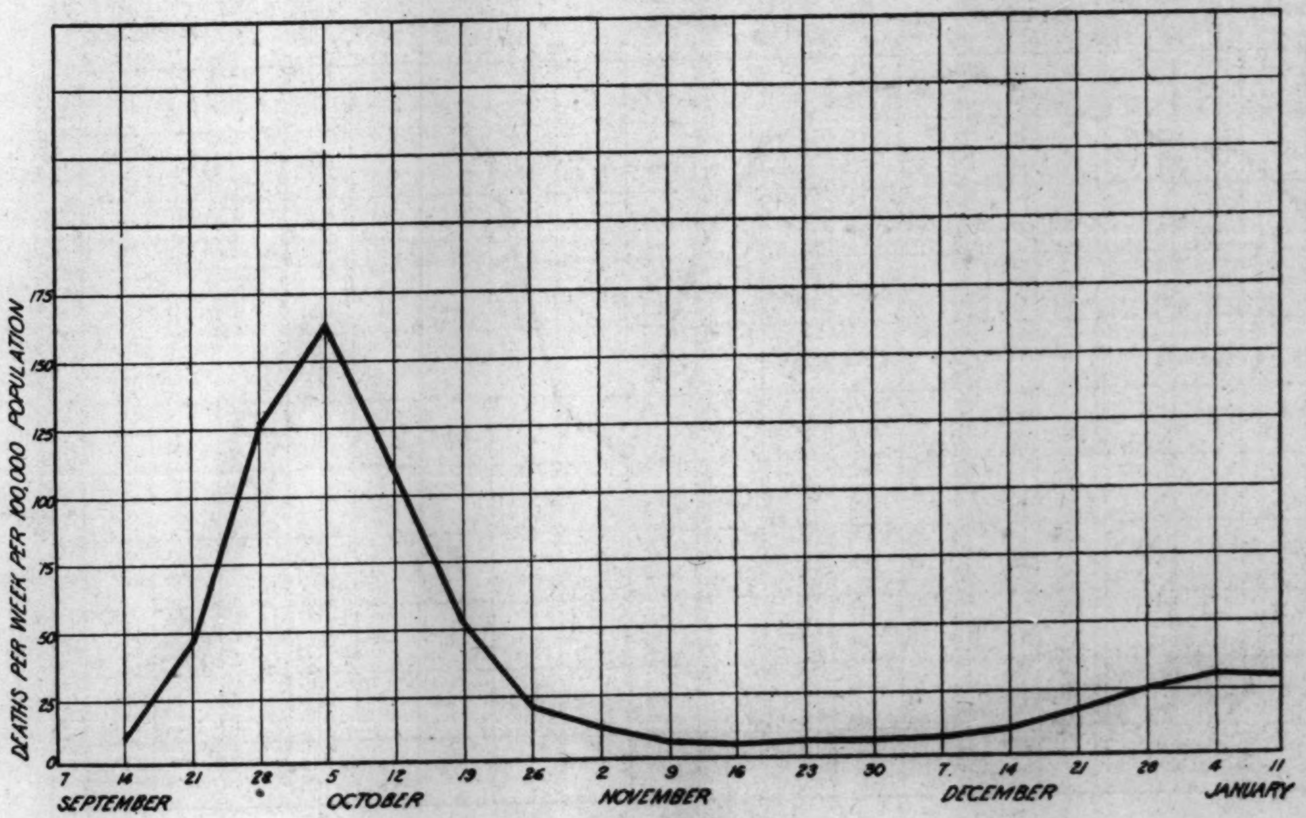


FIG. 4. Boston.

Influenza and Pneumonia Death Rates per 100,000 Population, by Weeks, California Cities.

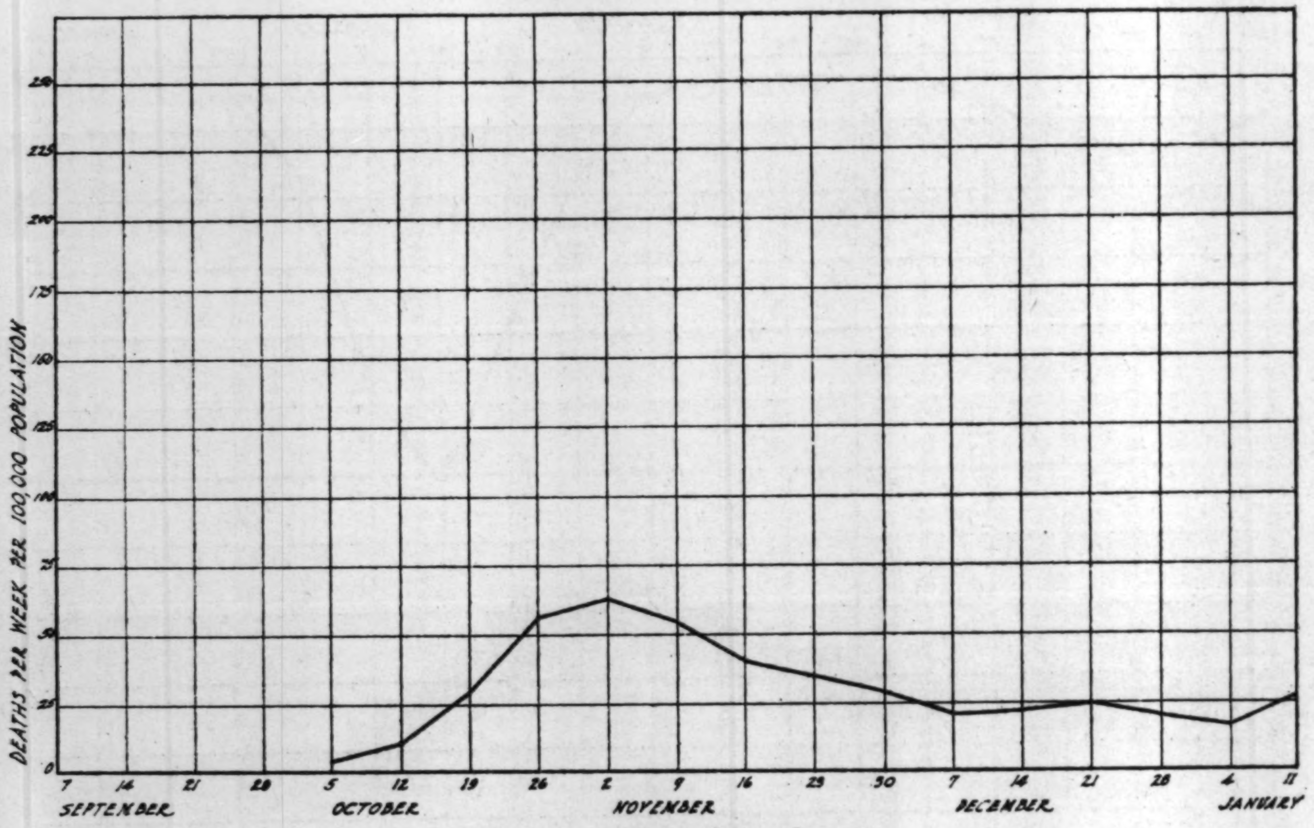


FIG. 5. Los Angeles.

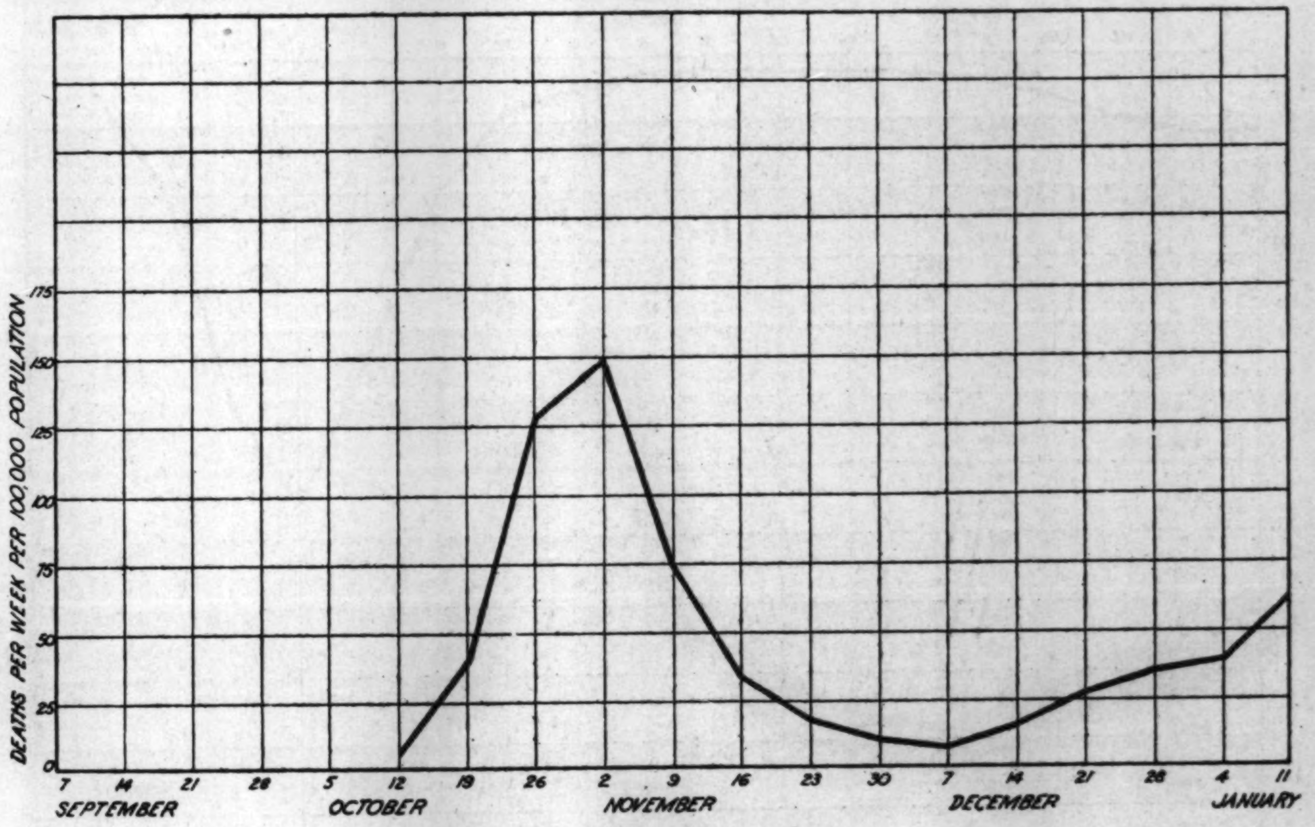


FIG. 6. San Francisco.

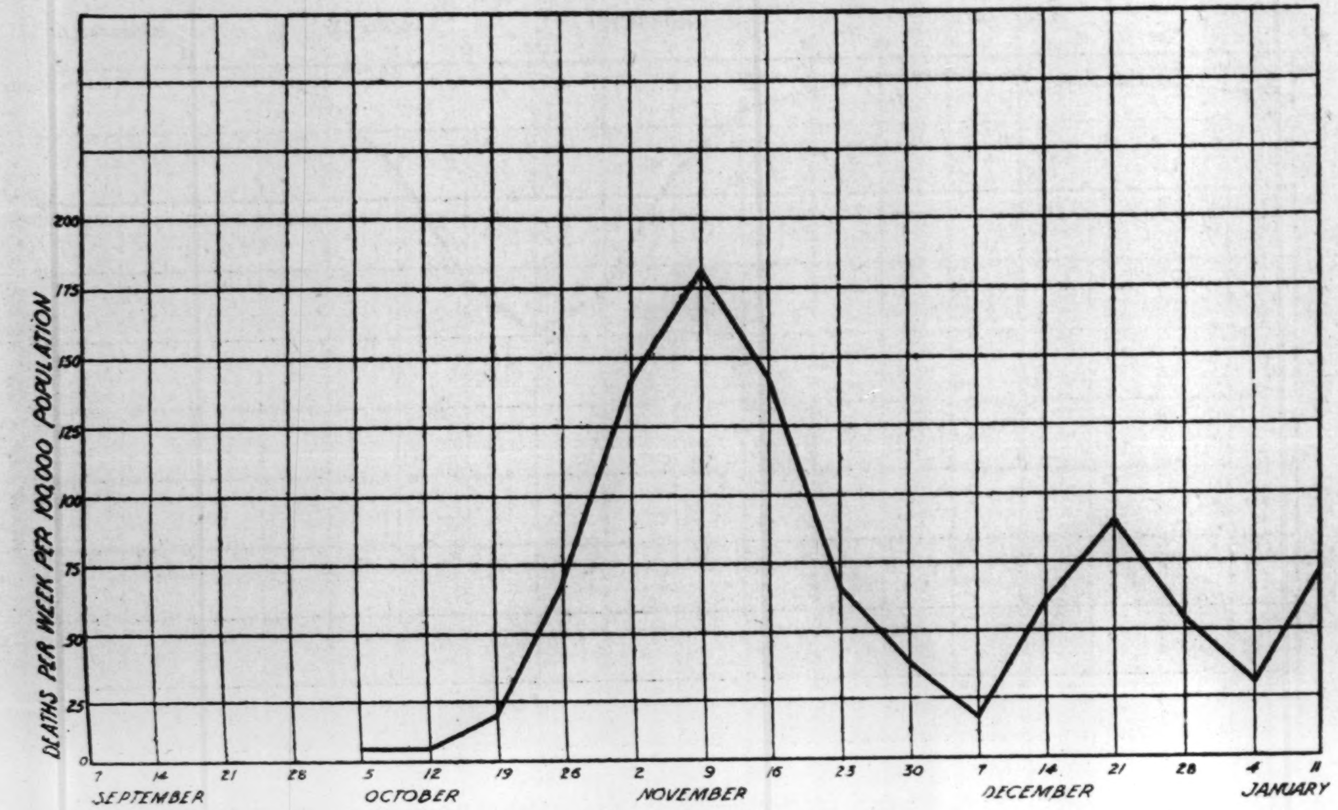


FIG. 7. Stockton.

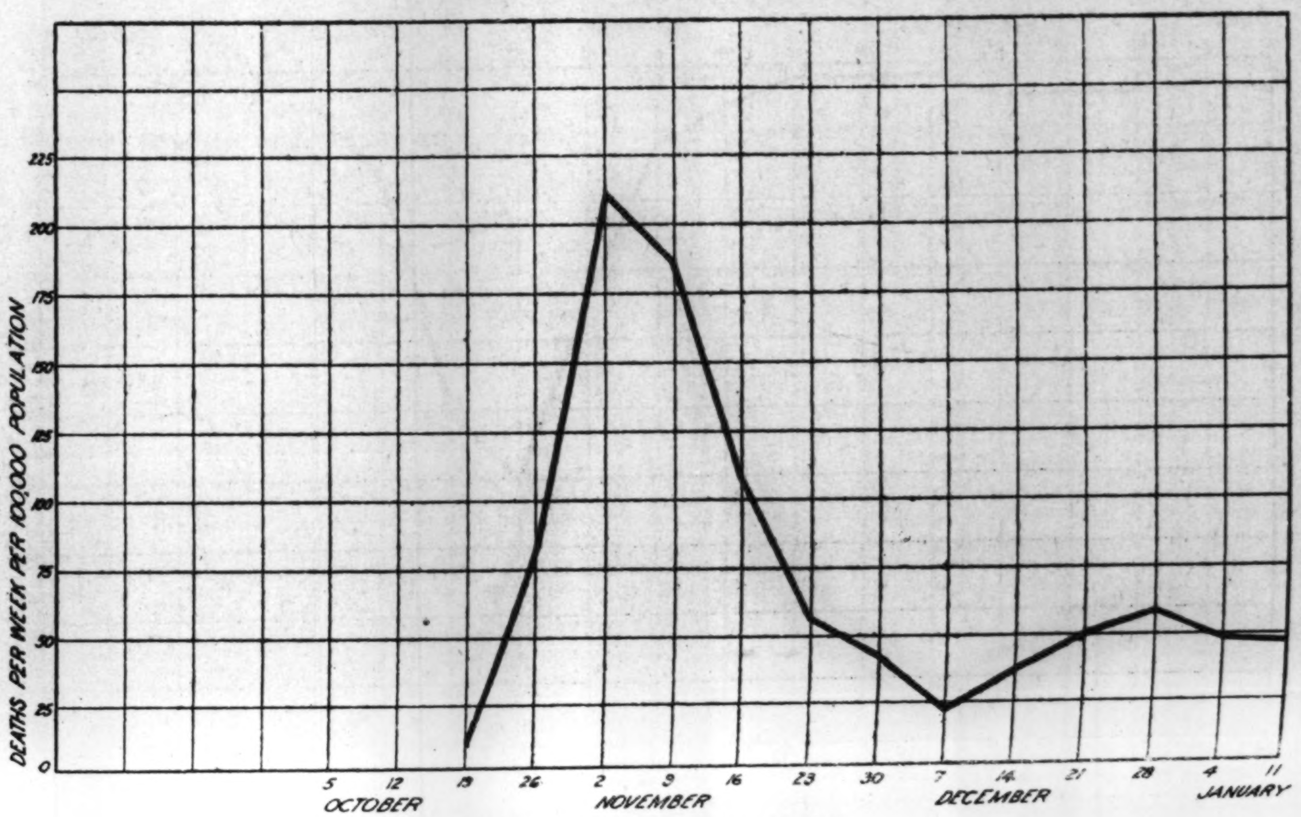


FIG. 8. Sacramento.

In the absence of scientific epidemiological information concerning this disease, local health departments are warranted in trying any plan that appears to offer any hope whatever, but it should be remembered that it is the duty of the State Board of Health to preserve its equilibrium at all times and to offer no advice that is not based on some more definite grounds than mere guesswork. With the great power and far-reaching results of the actions of the State Board of Health the possibilities for harm, if directed by hasty and unscientific policy, are manifest. California is fortunate in being in the same class as the states of New York, Massachusetts, and one or two others in the possession of a well-equipped public health department with a staff of highly trained and well-qualified experts, whose services and advice are always available to assist in the intelligent handling of emergencies, such as the present epidemic.

Measures Applied in the United States.

The principal measures that have been applied throughout the nation for the control of influenza are:

1. Limitation of Crowd Association.

This includes the closing of schools, churches, theaters, moving picture shows, public dances, supervision of cafe music, special sales in stores, regulating the hours for opening and closing factories to prevent the crowding of street cars, and also the complete closing of stores, saloons and pool halls.

2. Education of the public in measures of personal hygiene and prophylaxis.

3. Quarantine, including all measures, from mere isolation of cases to absolute quarantine of the entire family and the quarantining of towns, districts, etc.

4. The wearing of gauze masks.

5. The provision of hospital, medical and nursing facilities and the various sociological activities made necessary by any disease affecting such a large percentage of the population.

6. Vaccines.

7. Measures of sputum control.

No measures thus far offered other than those above mentioned are worthy of consideration even for a moment.

Limitation of Crowd Association.

In the light of available epidemiological evidence indicating that the disease is spread by direct contact, the closing of public gathering places would seem to be based upon sound reasoning. A period of sufficient time has elapsed since the beginning of the epidemic in this country that we can now cease mere speculation and use to advantage the actual experiences of different communities and various large cities, which have gathered accurate data on the epidemic. Some cities closed no gathering places, some closed nearly all, and others adopted an intermediate course.

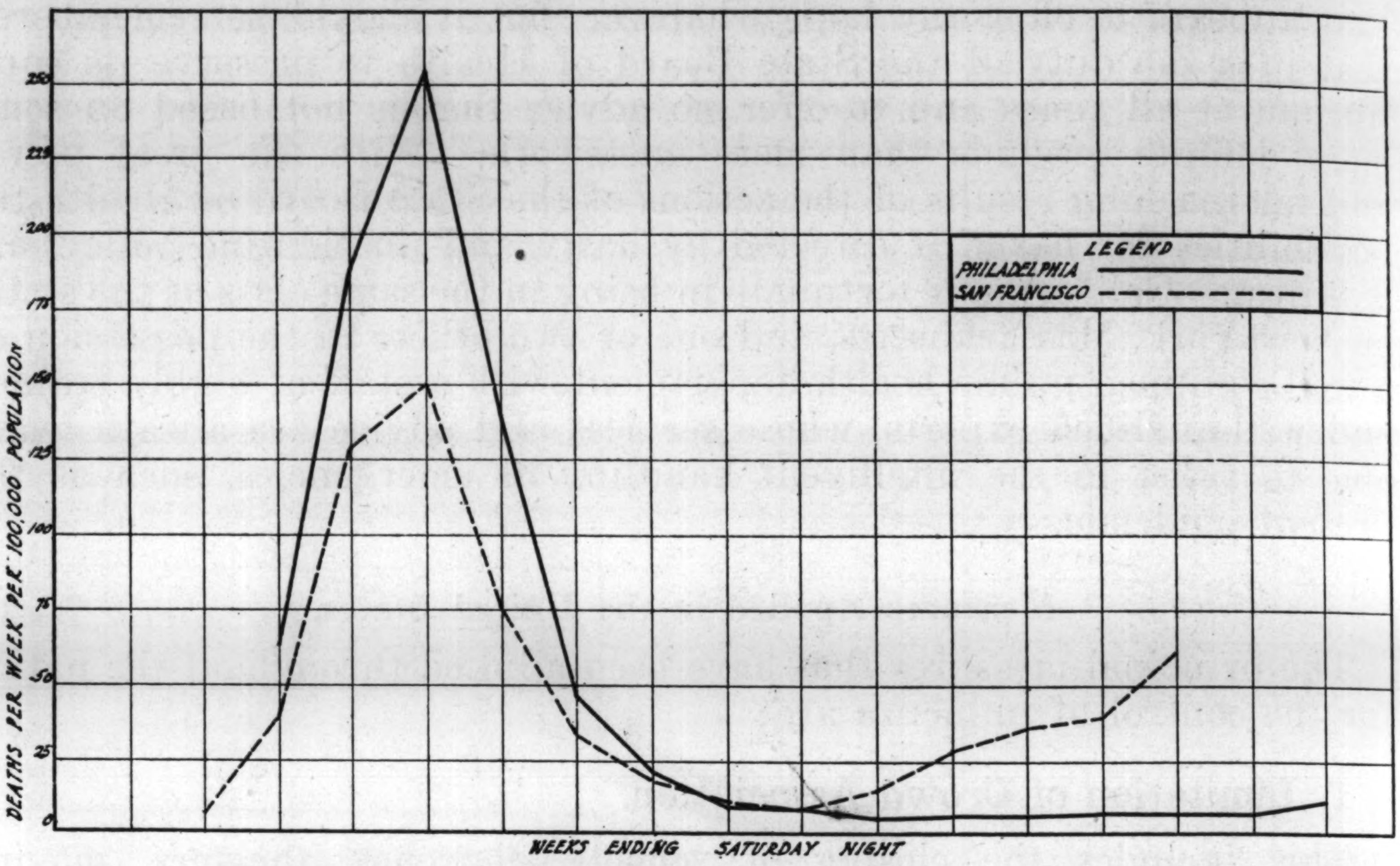


FIG. 9. Philadelphia and San Francisco. Comparative *death* rates per 100,000 population, by weeks.

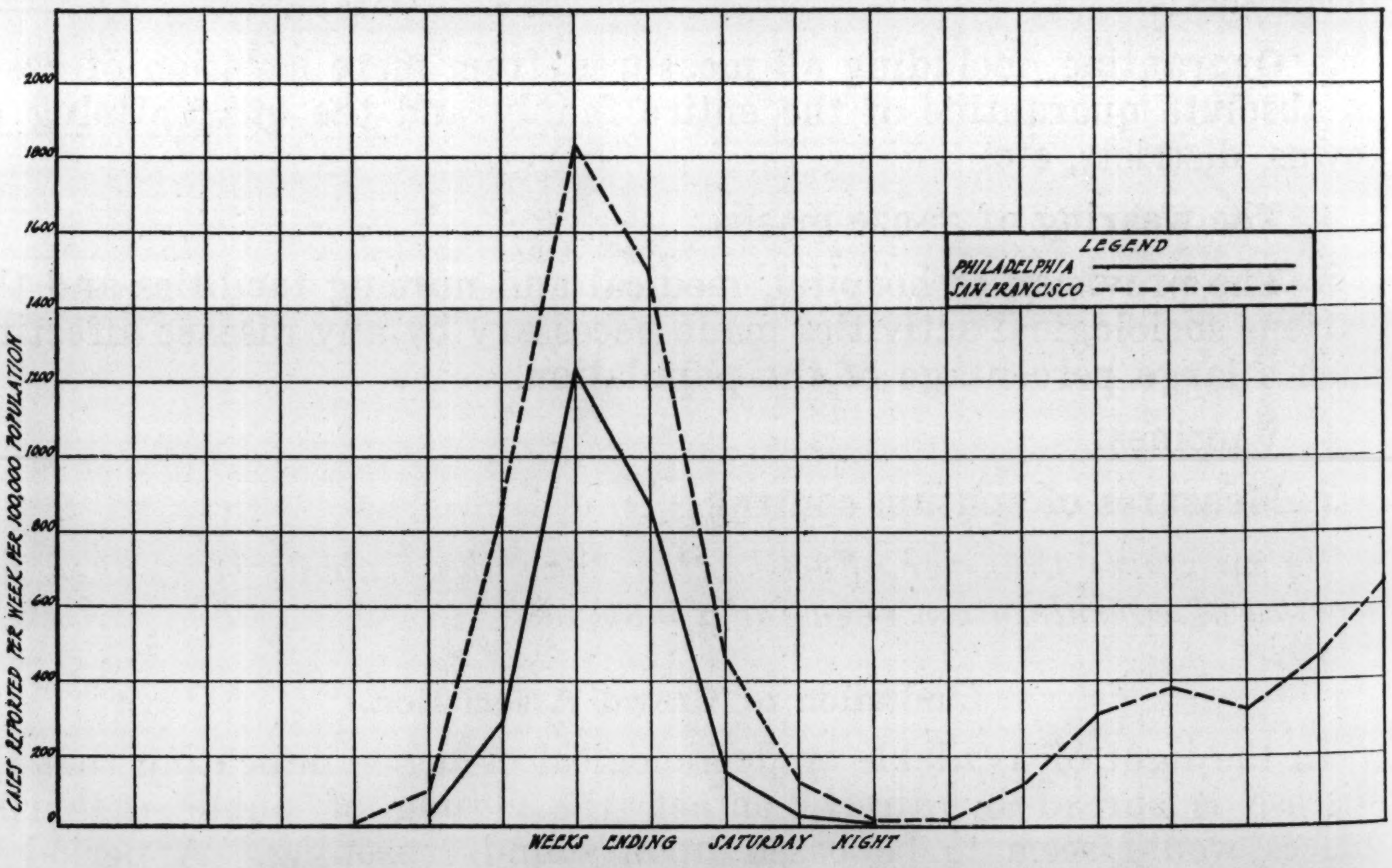


FIG. 10. Philadelphia and San Francisco. Comparative *case* rates per 100,000 population, by weeks.

For the purpose of drawing conclusions, the mortality records of various cities are herewith reproduced. (Fig. 1 to Fig. 8.) They will be referred to from time to time for the purpose of making comparisons between the different methods of procedure. It will be noted that the death records are invariably used by all authorities for the purpose of drawing conclusions in studying this disease, and the reason for this can be readily appreciated by inspecting Figure 9 and Figure 10. Although the death rate in Philadelphia, as shown in Figure 9, was higher than in San Francisco, the case rate as shown in Figure 10 was much lower, indicating clearly that the reporting of cases was more complete in San Francisco than in Philadelphia.

That the reporting of cases, even in San Francisco, is not accurate, is indicated by an inspection of Figure 11, which illustrates two things: First, that not only are morbidity reports unreliable, but second, and most disquieting of all, the fact is shown that there was undoubtedly a psychological influence acting upon the medical profession. This is very plainly illustrated. Following the discontinuance of masking and the publication of reports from the San Francisco Department of Health to the effect that conditions were practically normal, the cases reported daily fell to a figure out of all proportion to the deaths that were occurring daily. *There is absolutely no argument regarding the occurrence or nonoccurrence of a death from influenza or pneumonia as the State Registrar of Vital Statistics has on file the death certificate, which is a written record giving all the details, including the actual date of death.*

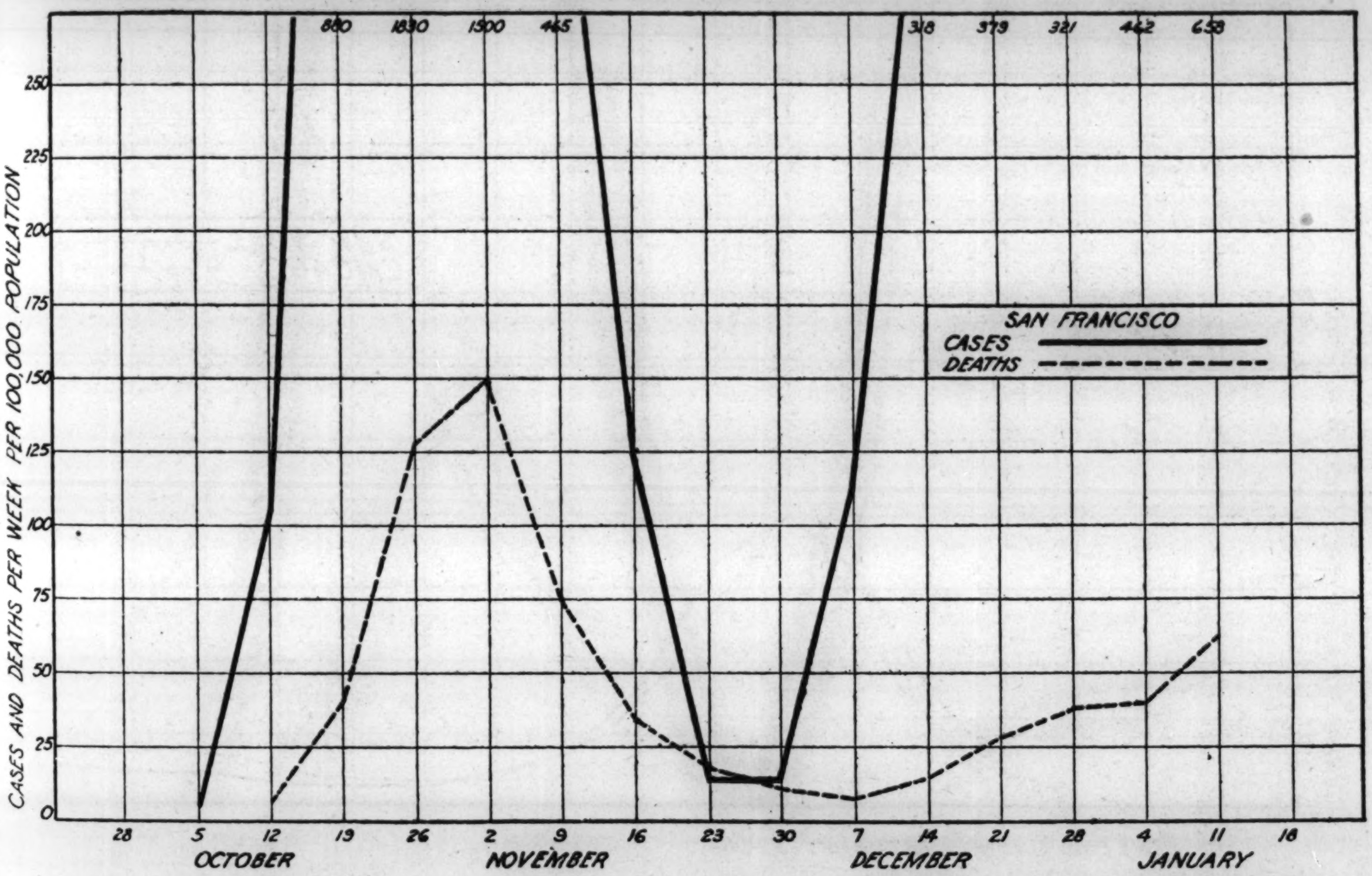


FIG. 11. San Francisco. Cases and deaths per 100,000 population by weeks.

There is only one explanation for the discrepancy between the case rates and the death rates in that part of the curve for November 23 to November 30, which shows that for two weeks there were about as many deaths occurring as there were cases reported. This would indicate that physicians, in their optimism following the subsidence of the main portion of the epidemic, unconsciously stretched a point in favor of the diagnosis against influenza. The same explanation applies in part to the rapid rise of cases following the demand of the health officer for the re-enactment of a masking ordinance, in which case the physicians were again impelled by the psychological influence of the nonsupport of the health department by the supervisors, to give the benefit of the doubt to the side of influenza in their diagnosis.

The city of New York did not prohibit any public gatherings, and the city of Chicago closed theaters and dances, but not churches and schools, and not there until after the crest of the epidemic had passed. (Fig. 12.)

All of the other cities, for which charts are presented, closed more or less completely, and attention is directed particularly to the curves for Boston and Washington, D. C., shown in Figure 13. Having Boston's experience before it, in which city closing was not instituted until the peak of the epidemic was reached, Washington closed everything before a dozen cases were known to exist in the city. The obvious conclusion from an inspection of these curves is that closing, at least in large cities, avails little or nothing.

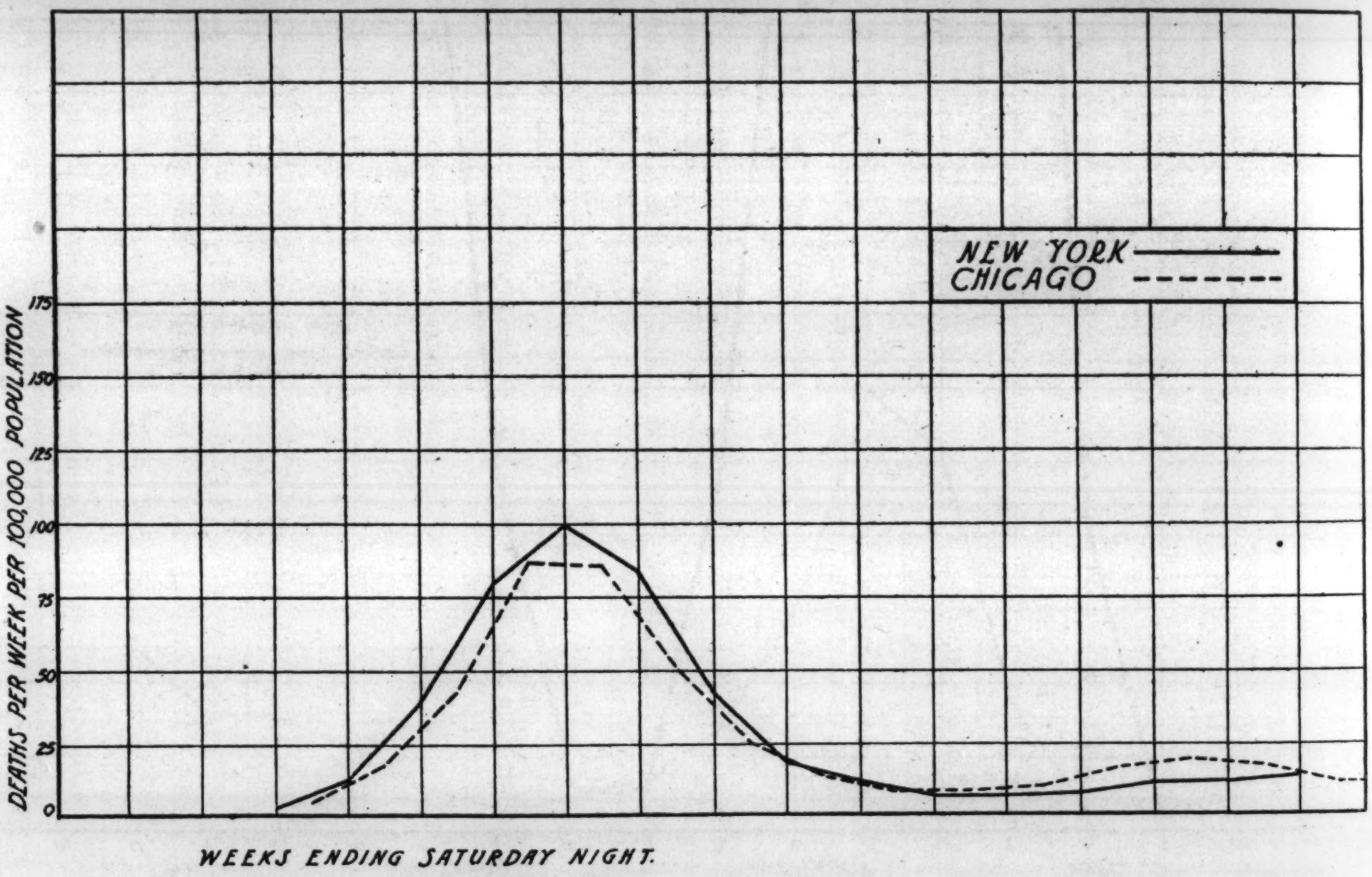


FIG. 12. Chicago and New York. Comparative death rates per 100,000 population, by weeks.

Without criticizing in the least the rationality of taking measures to prevent crowd association, it is not hard to discover the reason for this failure. The measure is capable of only partial application, because even after closing schools, theaters and such gathering places, there still remain the streets, street cars, stores, lobbies of the hotels, and other places where crowds may congregate. Conditions are different in rural communities: here crowds do not collect in places, such as stores, that must of necessity remain open; and where closing places of amusement means, for most people, retirement to the home.

Education of the Public in Measures of Personal Hygiene and Prophylaxis.

This is an important measure and would be more important if we were better informed concerning the cause and mode of spread of influenza. The present and universal tendency is to consider the disease as droplet borne, that is to say, the infectious agent probably exists in the secretions of the mouth and nose and is spread through the medium of the fine droplets of moisture expelled during the acts of sneezing, coughing and talking. Many of the individuals who inhale the infection, in turn, become infected. The conviction is growing among epidemiologists that the transfer of mouth secretions through the medium of eating and drinking utensils is common. Consequently, more and more attention is being paid to measures that favor this possibility. These considerations, for which we have no proof whatever, are the basis of hygienic advice given to the public so that they may take such individual measures as may be possible to protect themselves.

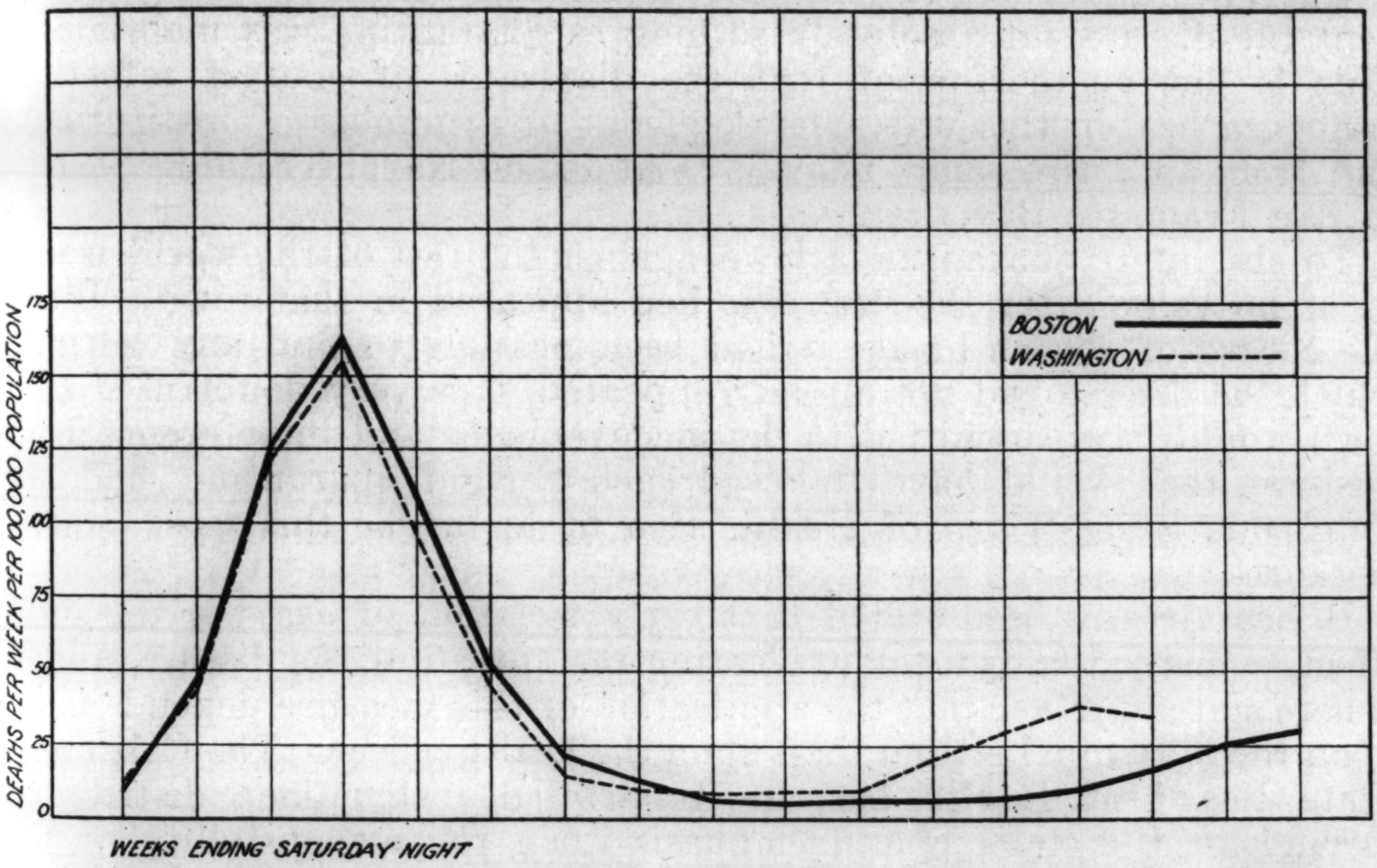


FIG. 13. Boston and Washington. Comparative death rates per 100,000 population, by weeks.

Two circulars are reproduced in Figure 14 and Figure 15. One of these gives directions and advice for the making and wearing of gauze masks, and both illustrate very well the objects striven for in this type of control measure. The California State Board of Health distributed more than 200,000 of these circulars early in the progress of the epidemic.

Quarantine.

In the absence of any definite knowledge of the etiology of the disease, quarantine is one of the most rational of control measures, but it is a measure that has, for various reasons, not seemed advisable for state-wide application. We have no laboratory means of diagnosis; also the establishment of a clinical diagnosis is frequently a matter of difficulty, as evidenced by the bizarre morbidity reporting previously referred to. These make the application of a rigid quarantine, with restriction of the movements of all members of the family, very uneven in its application. There are great possibilities of overlooking cases on the one hand, and of working undue hardship upon many persons, through a leaning toward making an easy diagnosis of influenza on the other hand.

The early isolation of cases, however, is of supreme importance. For this reason the California State Board of Health has made influenza reportable and isolatable, requiring that all cases be isolated in their own homes, without, however, the concomitant placarding and interference with the movements of others, that accompanies absolute quarantine.

Quarantine of whole communities, either intentional or unintentional, kept the disease out absolutely so long as quarantine was maintained. This is but another proof that the disease is of contact infection. Influenza has, in this way, been kept out of a number of institutions; and from an entire camp, namely, Goat Island Naval Training Station in San Francisco Bay.

To absolutely quarantine a town against the rest of the world would be of no value after the first case had appeared in that town. If, in the course of the outbreak, it had been possible to find any town in which the disease had not already appeared, it is very doubtful if that town would have submitted to the inconvenience and interference with business that would have followed such a rigid quarantine, had the California State Board of Health seen fit to invoke this most drastic measure.

It has already been stated that early isolation of cases is the most effective method known for preventing the spread of the disease, and it is here stated further that the application of this measure depends more upon the individual citizen than upon the health officer. The California State Board of Health has, in its printed instructions distributed throughout the state, placed emphasis upon the responsibility of the individual. The board has advised every person suffering from a cold to remain at home and to take every possible precaution not to come in contact with other persons. Many people suffering from so-called colds are in reality suffering from influenza in a mild form. Many severe cases of the disease have undoubtedly been contracted from persons suffering from such colds. If each individual were to realize his personal responsibility in this matter more good would be accomplished in the reduction of the prevalence of influenza than in any other way.

The Wearing of Gauze Masks.

Notwithstanding the fact that the very complete records at the disposal of the California State Board of Health indicate conclusively that the compulsory wearing of masks does not affect the progress of the epidemic, it was advised that individuals wear them when in close association with their friends, as it is upon just those occasions that, under a compulsory law, the mask is most liable to be laid aside. The use of the face mask was advised particularly in the presence of any one who was suffering from a cold or who had recently recovered from influenza.

Early in the progress of the epidemic the California State Board of Health issued a regulation (Fig. 16) requiring the wearing of masks by those in actual contact with known cases, and by persons suffering from a cold while in association with the general public. Under this regulation any health officer could arrest any person with a cold who was found going about in public unmasked. The reason for the above statement regarding the faults of the mask as an effective protection when applied forcibly to whole communities is to be found by a comparison of the mortality charts of those cities that did not use the mask with those cities that did. The frontispiece shows the cities of Boston, Buffalo, San Francisco and Washington, each with almost identically the same curve and the same death rate per hundred thousand, and in only one of them, San Francisco, was the mask used. New York City, before referred to, as one of those cities that did not prohibit public gatherings, did not use masks either, and its record of deaths is lower than that of any of the other larger cities. Stockton is one town in California that has worn the mask consistently. In Figure 18 is shown Stockton's record as compared with Boston, which did not require the mask. The conclusion is definitely established that, applied in this manner, the mask is ineffective and the reason, as in the case of closing, is also easy of explanation and does not necessarily disqualify the mask as a useful agent for application by the intelligent individual as a a means of personal protection. During the compulsory universal wearing of the mask in San Francisco it was generally observed that the masks were worn carefully under circumstances of least necessity, as upon the public streets and in the open air. They were just as conscientiously laid aside in private offices, and among gatherings of friends, the very places where the chances of contact with an early case of influenza and where the conditions for the transfer of droplet infection were the most favorable.

Many instances were observed among hospital attendants where apparently the mask was no protection to the wearers. This was the experience of the San Francisco Hospital, which, during the epidemic, was converted into an influenza hospital. In this institution 78 per cent of the nurses contracted influenza notwithstanding the fact that this is probably the best conducted hospital and under the best discipline of any similar institution in the state. These nurses lived in quarters, which are much better and less subject to crowding than is usual among similar groups in other hospitals, not more than three nurses occupying any one room. If the nurses contracted influenza from each other by reason of carelessness in wearing the mask in their own quarters, the expected incidence of infections should have corresponded with that of the general community, or not more than 10 per cent. The fact that the percentage of infections in this group was 78 per cent would seem to show beyond all doubt that the infection was received from the patients they cared for. It may be that some explanation other than the passage of the virus through the meshes of the gauze can be found, but if so, this does not alter the case in favor of the mask. If we take into consideration the influence of dosage in the production of infections, the case may not be as bad as this circumstance would indicate. It may be that the mask would have protected against an occasional exposure in the wards of the hospital; but incomplete obstruction to the passage of the virus and repeated exposure to a large number of patients undoubtedly operated to increase the dosage of infectious material capable of being received in spite of the wearing of the mask. However, that may be, and it is hoped that certain experiments now under way in the State Hygienic Laboratory of the California State Board of Health, will throw further light on this subject. The case against the mask as a measure of compulsory application for the control of epidemics appears to be complete.

Another most important reason for the failure of the mask, when universally worn, lies in the fact that the majority of masks worn under compulsory ordinances were not properly made and could not reasonably be expected to have any value whatever. Many instances were observed where the mask consisted of only one or two layers of a very coarse-mesh gauze, and the majority of the masks furnished by the Red Cross, which probably made up the bulk of those used, were undeniably too light and coarse in texture to do more than afford a comfortable feeling of safety on the part of the wearer. There seems to be some merit in the contention of certain physicians that the indiscriminate compulsory wearing of masks is objectionable by reason of the rebreathing of a small percentage of expired air, together with the warming of the total air intake. While not of sufficient moment to be considered when the wearing of the mask is actually necessary, it may perhaps have an unhygienic influence when extended to the entire working day of the individual.

It is not necessary for us, however, as health officers, to go into any such considerations as this for the only thing that concerns us is whether or not we can get results in the way of actually limiting the height and duration of the epidemic by means of this measure as applied by law.

The Provision of Hospital, Medical and Nursing Facilities.

The provision of hospital, medical and nursing facilities and various other sociological activities connected with the management of community measures during the epidemic of influenza are measures of the utmost importance as having a bearing, not so much upon the extension of the disease, as upon the total death rate, the comfort of the victims, and the subsequent influences upon related health matters, such as the prevalence of tuberculosis. It is of the utmost importance that communities so organize themselves that adequate hospital care can be provided for cases of influenza and complicating pneumonia. Constructing, or otherwise, obtaining, hospitals for these cases is made imperative by the necessity for conserving the supply of doctors and nurses and these patients can be more efficiently and more economically cared for in groups than when scattered throughout the community. Another reason for the construction of such hospials lies in the demonstrated fact that the influenza-pneumonia cases have a much lower mortality rate when cared for in out-of-door temporary shacks than in heated and less well-ventilated permanent structures. Realizing this need for temporary structures the California State Board of Health early in the epidemic sent blue prints of plans for the construction of such temporary hospitals to health officers and to municipal authorities throughout the State. These plans were prepared by the State Department of Engineering in accordance with suggestions made by the State Board of Health (Fig. 18). Providing for the wants of the large number of victims in their own homes who are not subjects for hospital care, because not suffering from pneumonia, but who, nevertheless, must depend upon their neighbors for the ordinary wants of life, is one of the problems requiring attention of the local authorities. Organization of the available resources should be accomplished early and arrangements made for the systematic card indexing of patients to avoid duplication in the assignment of home visitors, doctors, and nurses.

Vaccines.

Two types of vaccines have been used; one made from the so-called *influenza bacillus of Pfeiffer,* and the other made of various mixtures of the organisms associated with the secondary pneumonia complications. The first type would be the most rational if it were known that the Pfeiffer bacillus is the true cause, which is not the case. We are as much in the dark as ever regarding the microbial cause of influenza. The mixed vaccines directed against pneumonic complications offer more hope of being of some slight benefit, although some recent carefully controlled experiments by Dr. G. W. McCoy, Director of the Hygienic Laboratory of the U. S. Public Health Service, fail to show any protective value for either type of vaccine. The Hygienic Laboratory of the California State Board of Health, yielding to the popular clamor for vaccine, prepared and distributed, free of charge, many thousand doses of the influenza vaccine. The manufacture of the product has now been discontinued, as it was conclusively proved that it had no protective value. (See report of Influenza Committee of the American Public Health Association, page 20.)

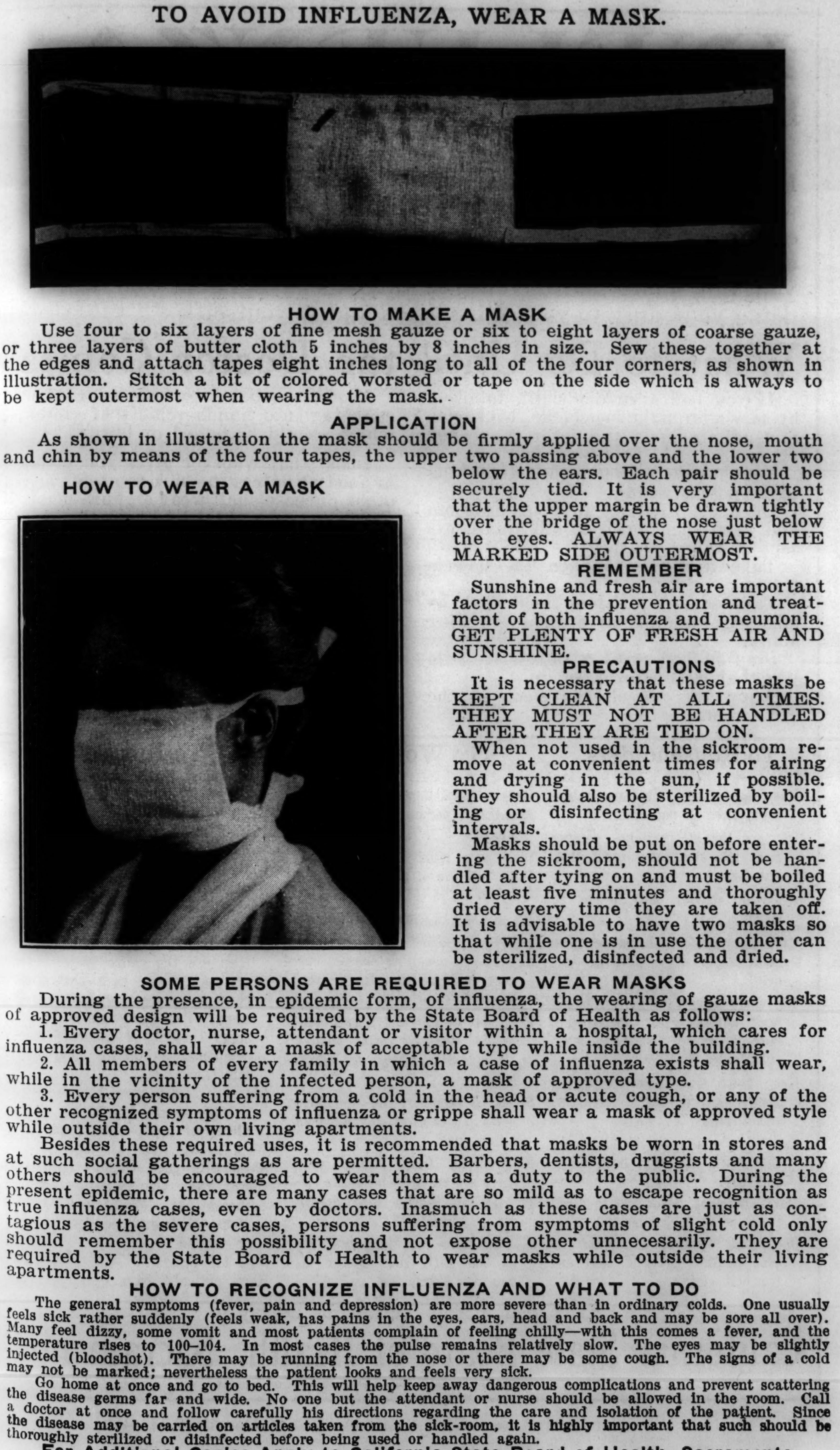
Measures of Sputum Control.

These include the enforcement of the anti-spitting law and the sterilization of drinking receptacles law. It is possible that the role of drinking and eating utensils in the transfer of mouth secretions is of great importance and these laws should be rigidly enforced. Failure to observe these laws should be sufficient justification for the closing of soda fountains, saloons, etc., when the law is not observed.

Before attempting to draw any conclusions that will aid us in the main question of interest, *"What Can We Do to Stop the Spread of Influenza?"* it will be just as well to review other world plagues, with which we are more familiar, because they have been completely worked out and largely conquered. For this purpose, the following table gives an idea of the progress of knowledge regarding the control of epidemic diseases.

THE EVOLUTION OF EPIDEMIC DISEASE CONTROL.

THE OLD.	THE NEW.
Before we had learned the cause and method of control.	Modern method of control and results thereof.
Bubonic Plague.	
In 1665, 78,000 people died in London. In 1894 an epidemic with the loss of millions of lives in India and China.	1918. Plague now possible of absolute control through knowledge of its cause and the relationship of the rat and flea to its spread.
Smallpox.	
One hundred years ago the person who was not pockmarked was the exception; caused fifteen million deaths in Europe during the seventeenth century.	1918. Through the discovery of vaccination by Jenner in 1796, is now a comparatively rare disease and the most easily controlled of all.
Cholera.	
In 1832 a terrible epidemic in the United States; churches, schools and public gatherings closed.	1918. Cause and spread now known. Protection of drinking water supplies an absolute safeguard.
Yellow Fever.	
Great epidemic in New Orleans in 1878, at which time mode of spread not known. Measures used, "shotgun quarantine," public gatherings closed.	1918. Mode of spread now known. Exterminate mosquitoes; almost eradicated from the entire world.
Influenza.	
In 1918 a great pandemic over the world; about 400,000 deaths in the United States. Cause, and mode of spread unknown. Measures used—closing of schools, churches, gatherings, wearing of masks, etc.	The future— ?



TO AVOID INFLUENZA, WEAR A MASK.

HOW TO MAKE A MASK

Use four to six layers of fine mesh gauze or six to eight layers of coarse gauze, or three layers of butter cloth 5 inches by 8 inches in size. Sew these together at the edges and attach tapes eight inches long to all of the four corners, as shown in illustration. Stitch a bit of colored worsted or tape on the side which is always to be kept outermost when wearing the mask.

APPLICATION

As shown in illustration the mask should be firmly applied over the nose, mouth and chin by means of the four tapes, the upper two passing above and the lower two below the ears. Each pair should be securely tied. It is very important that the upper margin be drawn tightly over the bridge of the nose just below the eyes. ALWAYS WEAR THE MARKED SIDE OUTERMOST.

HOW TO WEAR A MASK

REMEMBER

Sunshine and fresh air are important factors in the prevention and treatment of both influenza and pneumonia. GET PLENTY OF FRESH AIR AND SUNSHINE.

PRECAUTIONS

It is necessary that these masks be KEPT CLEAN AT ALL TIMES. THEY MUST NOT BE HANDLED AFTER THEY ARE TIED ON.

When not used in the sickroom remove at convenient times for airing and drying in the sun, if possible. They should also be sterilized by boiling or disinfecting at convenient intervals.

Masks should be put on before entering the sickroom, should not be handled after tying on and must be boiled at least five minutes and thoroughly dried every time they are taken off. It is advisable to have two masks so that while one is in use the other can be sterilized, disinfected and dried.

SOME PERSONS ARE REQUIRED TO WEAR MASKS

During the presence, in epidemic form, of influenza, the wearing of gauze masks of approved design will be required by the State Board of Health as follows:

1. Every doctor, nurse, attendant or visitor within a hospital, which cares for influenza cases, shall wear a mask of acceptable type while inside the building.
2. All members of every family in which a case of influenza exists shall wear, while in the vicinity of the infected person, a mask of approved type.
3. Every person suffering from a cold in the head or acute cough, or any of the other recognized symptoms of influenza or grippe shall wear a mask of approved style while outside their own living apartments.

Besides these required uses, it is recommended that masks be worn in stores and at such social gatherings as are permitted. Barbers, dentists, druggists and many others should be encouraged to wear them as a duty to the public. During the present epidemic, there are many cases that are so mild as to escape recognition as true influenza cases, even by doctors. Inasmuch as these cases are just as contagious as the severe cases, persons suffering from symptoms of slight cold only should remember this possibility and not expose other unnecesarily. They are required by the State Board of Health to wear masks while outside their living apartments.

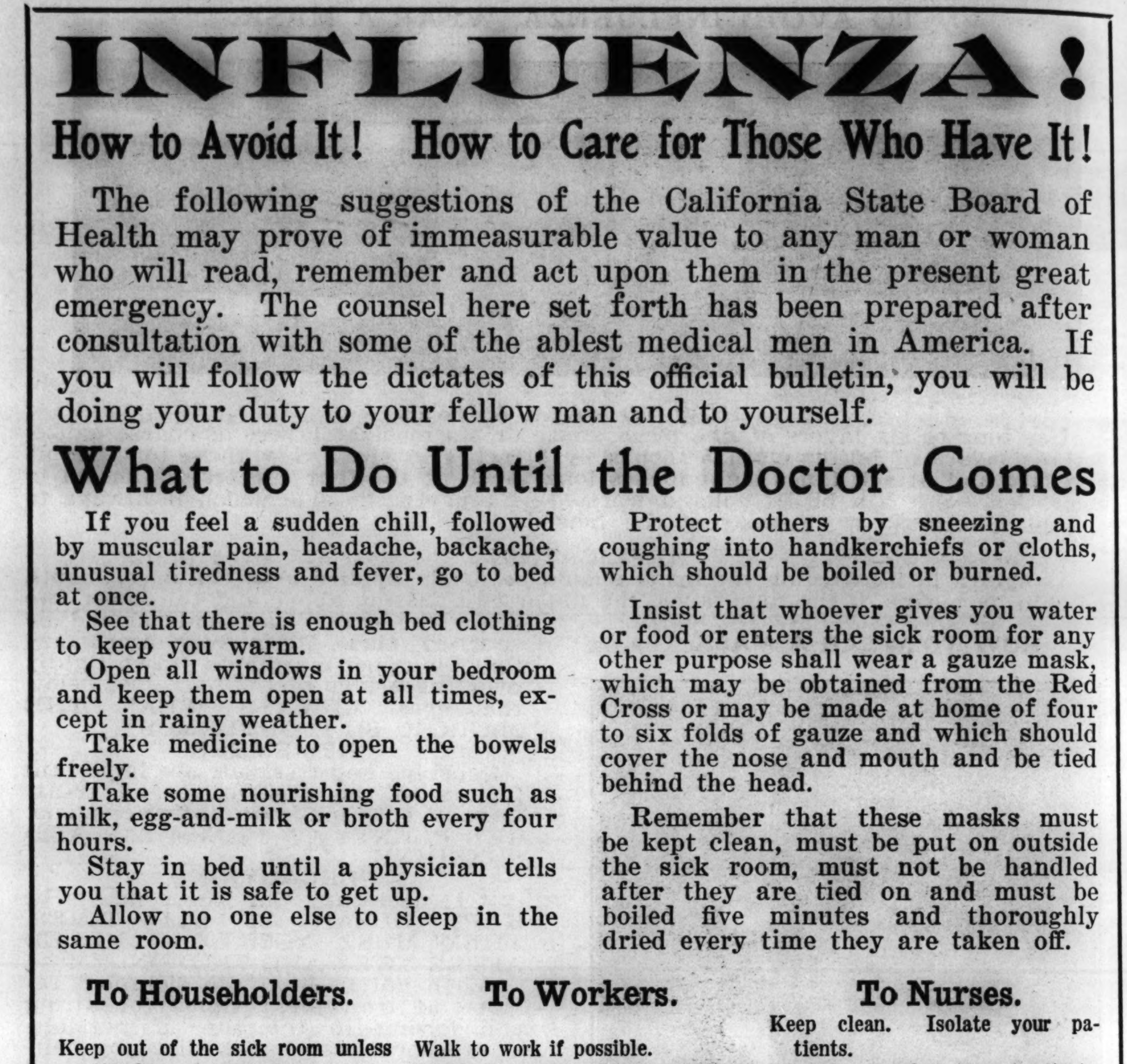
HOW TO RECOGNIZE INFLUENZA AND WHAT TO DO

The general symptoms (fever, pain and depression) are more severe than in ordinary colds. One usually feels sick rather suddenly (feels weak, has pains in the eyes, ears, head and back and may be sore all over). Many feel dizzy, some vomit and most patients complain of feeling chilly—with this comes a fever, and the temperature rises to 100–104. In most cases the pulse remains relatively slow. The eyes may be slightly injected (bloodshot). There may be running from the nose or there may be some cough. The signs of a cold may not be marked; nevertheless the patient looks and feels very sick.

Go home at once and go to bed. This will help keep away dangerous complications and prevent scattering the disease germs far and wide. No one but the attendant or nurse should be allowed in the room. Call a doctor at once and follow carefully his directions regarding the care and isolation of the patient. Since the disease may be carried on articles taken from the sick-room, it is highly important that such should be thoroughly sterilized or disinfected before being used or handled again.

For Additional Copies Apply to California State Board of Health, Sacramento

FIG. 14. Mask poster issued by the California State Board of Health.



INFLUENZA!

How to Avoid It! How to Care for Those Who Have It!

The following suggestions of the California State Board of Health may prove of immeasurable value to any man or woman who will read, remember and act upon them in the present great emergency. The counsel here set forth has been prepared after consultation with some of the ablest medical men in America. If you will follow the dictates of this official bulletin, you will be doing your duty to your fellow man and to yourself.

What to Do Until the Doctor Comes

If you feel a sudden chill, followed by muscular pain, headache, backache, unusual tiredness and fever, go to bed at once.

See that there is enough bed clothing to keep you warm.

Open all windows in your bedroom and keep them open at all times, except in rainy weather.

Take medicine to open the bowels freely.

Take some nourishing food such as milk, egg-and-milk or broth every four hours.

Stay in bed until a physician tells you that it is safe to get up.

Allow no one else to sleep in the same room.

Protect others by sneezing and coughing into handkerchiefs or cloths, which should be boiled or burned.

Insist that whoever gives you water or food or enters the sick room for any other purpose shall wear a gauze mask, which may be obtained from the Red Cross or may be made at home of four to six folds of gauze and which should cover the nose and mouth and be tied behind the head.

Remember that these masks must be kept clean, must be put on outside the sick room, must not be handled after they are tied on and must be boiled five minutes and thoroughly dried every time they are taken off.

To Householders.

Keep out of the sick room unless attendance is necessary.

Do not handle articles coming from the sick room until they are boiled.

Allow no visitors, and do not go visiting.

Call a doctor for all inmates who show signs of beginning sickness.

The usual symptoms are: Inflamed and watery eyes, discharging nose, backache, headache, muscular pain, and fever.

Keep away from crowded places, such as "movies," theaters, street cars.

See to it that your children are kept warm and dry, both night and day.

Have sufficient fire in your home to disperse the dampness.

Open your windows at night. If cool weather prevails, add extra bed clothing.

To Workers.

Walk to work if possible.

Avoid the person who coughs or sneezes.

Wash your hands before eating.

Make full use of all available sunshine.

Do not use a common towel. It spreads disease.

Should you cough or sneeze, cover nose and mouth with a handkerchief.

Keep out of crowded places. Walk in the open air rather than go to crowded places of amusement.

Sleep is necessary for well-being—avoid over-exertion. Eat good, clean food.

Keep away from houses where there are cases of influenza.

If sick, no matter how slightly, see a physician.

If you have had influenza, stay in bed until your doctor says you can safely get up.

To Nurses.

Keep clean. Isolate your patients.

When in attendance upon patients, wear a mask which will cover both the nose and the mouth. When the mask is once in place, do not handle it.

Change the mask every two hours. Owing to the scarcity of gauze, boil for 5 minutes and rinse, then use the gauze again.

Wash your hands each time you come in contact with the patient. Use bichloride of mercury, 1-1000, or Liquor Cresol compound, 1-100 for hand disinfection.

Obtain at least seven hours' sleep in each twenty-four hours. Eat plenty of good, clean food.

Walk in the fresh air daily.

Sleep with your windows open.

Insist that the patient cough, sneeze or expectorate into cloths that may be disinfected or burned.

Boil all dishes.

Keep patients warm.

For Copies of this Publication Apply to

California State Board of Health, Sacramento

(Prepared by Massachusetts State Department of Health)

FIG. 15. Influenza poster issued by California State Board of Health.

CALIFORNIA STATE BOARD OF HEALTH.

SACRAMENTO, October 21, 1918.

To all city and county health officers:

Acting under authority of section 2979*a* of the Political Code, the wearing of gauze masks of approved design during the presence, in epidemic form, of influenza, will be required as follows:

1. Every doctor, nurse, attendant or visitor within a hospital, which cares for influenza cases, shall wear a mask of acceptable type while inside the building.

2. All members of every family in which a case of influenza exists shall wear, while in the vicinity of the infected person, a mask of approved type.

3. Every person suffering from a cold in the head or acute cough, or any of the other recognized symptoms of influenza or grippe shall wear a mask of approved type while outside their own living apartments.

An acceptable type of mask is made of from two to four layers of fine mesh gauze or six to eight layers of coarser gauze, or of three layers of butter cloth, 5 inches by 8 inches in size, and held firmly over the face by means of tapes attached to the corners.

Another acceptable type is made by folding cornerwise a clean closely woven handkerchief and tying two corners behind the head, the other corner falling below the chin, the upper margin crossing the face just below the eyes.

In many instances department store managers may be prevailed upon to require their clerks to wear them and it will be of the utmost value if barbers, dentists and particularly druggists would wear them. The greatest publicity should be given to the mask as a preventive measure and the public encouraged to wear them generally both in and out of doors.

Yours very truly,

W. H. KELLOGG, M.D.
Secretary.

FIG. 16. Regulations of the California State Board of Health, requiring the use of the mask upon certain individuals.

COMMENTS AND RECOMMENDATIONS OF THE COMMITTEES OF THE AMERICAN PUBLIC HEALTH ASSOCIATION, WHICH MET IN CHICAGO DECEMBER 9-12, 1918.

"The present epidemic is the result of a disease of extreme communicability. So far as information available to the committee shows, the disease is limited to human beings.

"The micro-organism or virus primarily responsible for this disease has not yet been identified. There is, however, no reason whatsoever for doubting that such an agency is responsible for it. Mental conditions may cause one to believe he has influenza when he has not, and may make the patient who has the disease suffer more severely than he otherwise would. No mental state alone, however, will cause the disease in one who is not infected by the organism or virus that underlies the malady.

"While the prevailing disease is generally known as influenza, and while it will be so referred to in this statement, it has not yet been satisfactorily established that it is the identical disease heretofore known by that name, nor has it been definitely established that all preceding outbreaks of disease styled at the time 'influenza' have been outbreaks of one and the same malady.

"There is no known laboratory method by which an attack of influenza can be differentiated from an ordinary cold or bronchitis or other inflammation of the mucous membranes of the nose, pharynx, or throat.

"There is no known laboratory method by which it can be determined when a person who has suffered from influenza ceases to be capable of transmitting the disease to others.

"Deaths resulting from influenza are commonly due to pneumonias resulting from an invasion of the lungs by one or more forms of streptococci, or by one or more forms of pneumococci, or by the so-called influenza bacillus, or bacillus of Pfeiffer. This invasion is apparently secondary to the initial attack.

"Evidence seems conclusive that the infective micro-organism or virus of influenza is given off from the nose and mouth of infected persons. It seems equally conclusive that it is taken in through the mouth or nose of the person who contracts the disease, and in no other way, except as a bare possibility through the eyes, by way of the conjunctivæ or tear ducts.

"If it be admitted that influenza is spread solely through discharges from the noses and throats of infected persons finding their way into the noses and throats of other persons susceptible to the disease, then no matter what the causative organism or virus may ultimately be determined to be, preventive action logically follows the principles named below and, therefore, it is not necessary to wait for the discovery of the specific micro-organism or virus before taking such action.

"I. Break the channels of communication by which the infective agent passes from one person to another.

"II. Render persons exposed to infection immune, or at least more resistant, by the use of vaccines" (if we had such an agent).

"III. Increase the natural resistance of persons exposed to the disease, by augmented healthfulness."

The first of these three postulates is the most important and will be discussed after quoting from the report on the other two. Regarding the second postulate, the use of vaccines, the committee says: "In view of the fact that the causative organism is unknown, there is no scientific basis for the use of any particular vaccine against the primary disease. If used, any vaccine must be employed on the chance that it bears a relation to the unknown organism causing the disease.

"The use of vaccines for the complicating infections rests on more logical grounds, and yet the committee has not sufficient evidence to indicate that they can be used with any confident assurance of success. In the use of these vaccines the patient should realize that the practice is still in a developmental stage."

The third, or Increase of Natural Resistance Measure, is disposed of, briefly, as follows: "Physical and nervous exhaustion should be avoided by paying due regard to rest, exercise, physical and mental labor and hours of sleep. The evidence is conclusive, however, that youth and bodily vigor do not guarantee immunity to the disease."

The first postulate is treated as follows, essential paragraphs only being reproduced:

"The nature of the preventive measures practicable and necessary in any given community depends in a large part upon the nature of the community itself, as to population characteristics, industries, and so on, and upon the stage and type of the epidemic curve. For example, the measures to be adopted in a purely rural community would not be practicable or desirable in a large metropolitan area, nor would the measures desirable and feasible at the beginning or end of an epidemic be found those best adapted for the intervening period. The committee has found it impossible, therefore, to lay down any rules for the guidance of all health officials alike in preventive measures. The most it has been able to do has been to state certain general principles that in its judgment should underlie administrative measures for the prevention of influenza. The application of these principles to the needs of any particular community must be left for determination by the officers of that community who are responsible for the protection of its public health.

"The preventive measures recommended by the committee are as follows:

"A. Efficient organization to meet the emergency, providing for a centralized co-ordination and control of all resources.

"B. Machinery for ascertaining all facts regarding the epidemic:

1. Compulsory reporting.
2. A lay or professional canvass for cases, etc.

"C. Widespread publicity and education with respect to respiratory hygiene, covering such facts as the dangers from coughing, sneezing, spitting, and the careless disposal of nasal discharges; the advisability of keeping the fingers and foreign bodies out of the mouth and nose; the necessity of handwashing before eating; the dangers from exchanging handkerchiefs; and the advantages of fresh air and general hygiene. Warnings should be given regarding the danger of the common cold, and possibly cold should be made reportable so as to permit the sending of follow-up literature to persons suffering from them. The public should be made acquainted with the danger of possible carriers among both the sick and the well and the resultant necessity for the exercise of unusual care on the part of everybody with respect to the dangers of mouth and nasal discharges.

"D. Administrative procedures:

1. There should be laws against the use of common cups, and improperly washed glasses at soda fountains and other public drinking places, which laws should be enforced.

2. There should be proper ventilation laws, which laws should be enforced.

"**Closing:** Nonessential gatherings should be prohibited. Necessary gatherings should be held under such conditions as will insure the greatest possible amount of floor space to each individual present, and a maximum of fresh air, and precautions should be taken to prevent unguarded sneezing, coughing, cheering, etc.

"Where the necessary activities of the population, such as the performance of daily work and earning of a living, compel considerable crowding and contact, but little is gained by closing certain types of meeting places. If, on the other hand, the community can function without much of contact between individual members thereof, relatively much is gained by closing or preventing assemblages.

"**Schools:** (*a*) Theoretically, schools increase the number and degree of contacts between children. If the schools are closed, many of the contacts which the children will make are likely to be out of doors. Whether or not closing will decrease or increase contacts must be determined locally. Obviously, rural and urban conditions differ radically in this regard.

(*b*) Are the children in coming to and going from school exposed to inclement weather or long rides in overcrowded cars?

(*c*) Is there an adequate nursing and inspection system in the schools? * * *

"**Churches:** If churches are to remain open, services should be reduced to the lowest number consistent with the adequate discharge of necessary religious offices, and such services as are held should be conducted in such a way as to reduce to a minimum, intimacy and frequency of personal contact.

"**Theaters:** As regards theaters, movies, and meetings for amusement in general, it seems unwise to rely solely or in great part upon the ejection of careless coughers. In the first place it is difficult to determine who is a careless cougher, and after each cough, danger has already resulted. It seems, too, that the closing of theaters may have as much educational value as their use for direct educational purposes, etc. Discrimination as to closing among theaters, movies, etc., on the basis of efficiency of ventilation and general sanitation, may be feasible.

"**Funerals:** Public funerals and accessory funeral functions should be prohibited, being unnecessary assemblies in limited quarters, increasing contacts and possible sources of infection.

"**Masks:** The wearing of proper masks in a proper manner should be made compulsory in hospitals and for all who are directly exposed to infection. It should be made compulsory for barbers, dentists, etc. The evidence before the committee as to beneficial results consequent upon the enforced wearing of masks by the entire population at all times was contradictory, and it has not encouraged the committee to suggest the general adoption of the practice. Persons who desire to wear masks, however, in their own interests, should be instructed as to how to make and wear proper masks, and encouraged to do so.

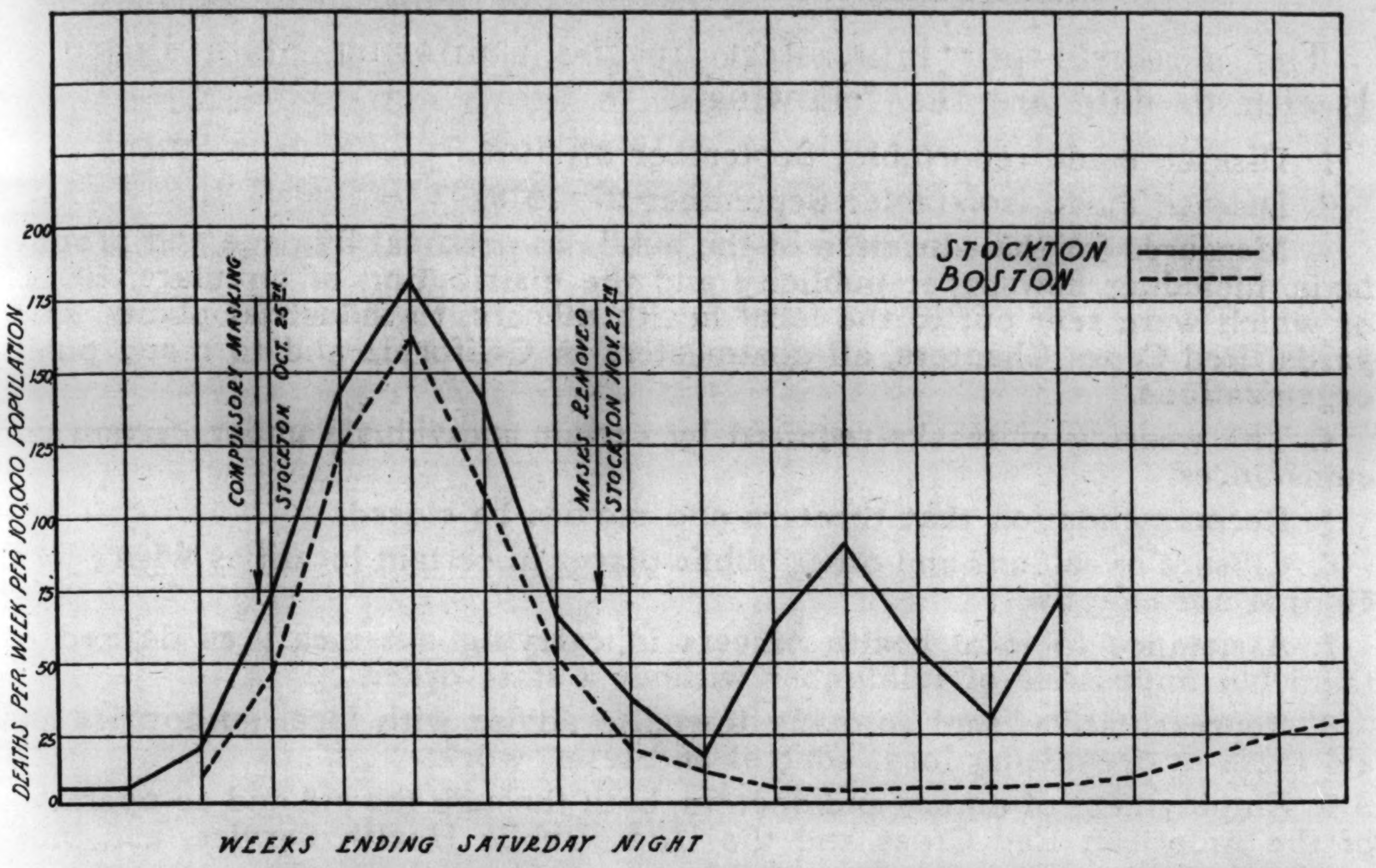


FIG. 17. Stockton, California, and Boston, Massachusetts. Comparative death rates per 100,000 population, by weeks. The use of masks was made compulsory in Stockton, but not in Boston.

"**Isolation**: The isolation of patients suffering from influenza should be practised. In cases of unreasonable carelessness, it should be legally enforced most rigidly.

"**Placarding**: In cases of unreasonable carelessness and disregard of the public interests placarding should be enforced.

"**Coughing and Sneezing**: Laws regulating coughing and sneezing seem to be desirable for educational and practical results.

"**Terminal Disinfection**: Terminal disinfection for influenza has no advantage over cleaning, sunning and airing.

"**Alcohol**: The use of alcohol serves no preventive purpose.

"**Sprays and Gargles**: Sprays and gargles do not protect the nose and throat from infection, for the following reasons:

(*a*) So far as the knowledge of the committee extends, no germicide strong enough to destroy infective organisms can be applied to the nose and throat without at the same time injuring the mucous membranes.

(*b*) Irrigation of the nose and throat to accomplish the complete mechanical removal of the infective organism is impracticable.

(*c*) Their use tends to remove the protective mucus, to spread the infection and to increase the liability of actual entrance of the infective organisms.

(*d*) Their domestic use is liable to lead in families to a common employment of the same utensils.

(*e*) The futility of sprays and gargles has been demonstrated with respect to certain known organisms such as the diphtheria bacillus and the meningococcus."

MEASURES ADOPTED IN CALIFORNIA.

The measures put into effect by the California State Board of Health to date are the following:

1. Disease made reportable: September 27, 1918.

2. Disease made isolatable: September 27, 1918.

3. Measures for the education of the public in personal hygiene and prophylaxis, including newspaper publicity and the distribution of circulars, 200,000 of which were sent out to the local health officers, to industrial plants, shipyards, Red Cross Chapters, all postmasters in California and to many public organizations.

4. The wearing of masks required by certain individuals under certain circumstances.

5. Recommendation that theaters and movies be closed.

6. Closure of saloons and other public places in certain localities where local control not effective.

7. Assistance to local health officers in carrying out measures desired by them but impossible of fulfillment without a state order.

8. Representatives sent to many towns to advise with local authorities and aid them in organizing local control and relief work.

9. Employment of nurses and doctors, both through the aid and co-operation of the American Red Cross and the U. S. Public Health Service, and independently from state emergency funds.

10. Numerous telegrams and circular letters containing suggestions for the guidance of local health officers sent out.

SUGGESTIONS FOR LOCAL HEALTH AUTHORITIES.

Some of these are more than suggestions, being requirements of the State Board of Health.

1. Enforce the prompt reporting of cases.
2. Enforce the immediate isolation of cases.
3. Organize and maintain machinery for the proper care of the sick, the furnishing of medical and nursing services, the provision of hospital facilities, and distribution of general community relief.
4. Close schools unless adequate nursing or medical inspection services available.
5. Close unnecessary public gatherings, especially in smaller and rural communities; (not, however, very effective in larger cities).
6. Enforce the state regulation regarding the wearing of masks.
7. Enforce the state law requiring sterilization of drinking receptacles.
8. Enforce the state law regarding expectoration in public places.
9. **Health officers should give publicity to the fact that the burden of responsibility in the control of influenza rests, after all, chiefly upon the people themselves. The difficulty in framing intelligent quarantine measures and the difficulties in diagnosis**

make it imperative that each citizen should be alive to his responsibilities to the rest of the community. People should remain at home whenever suffering from a cold, even though they have no suspicion that they may have influenza. The isolation of cases is undoubtedly of first importance and this is, after all, largely a matter of education of the general public, with voluntary observance of the common sense demands of the situation on their part.

10. Health officers and legislative bodies are invited to call upon the California State Board of Health for aid in solving their local problems, and in furtherance of this desire the Board stands ready to send a representative, when desired, for consultation.

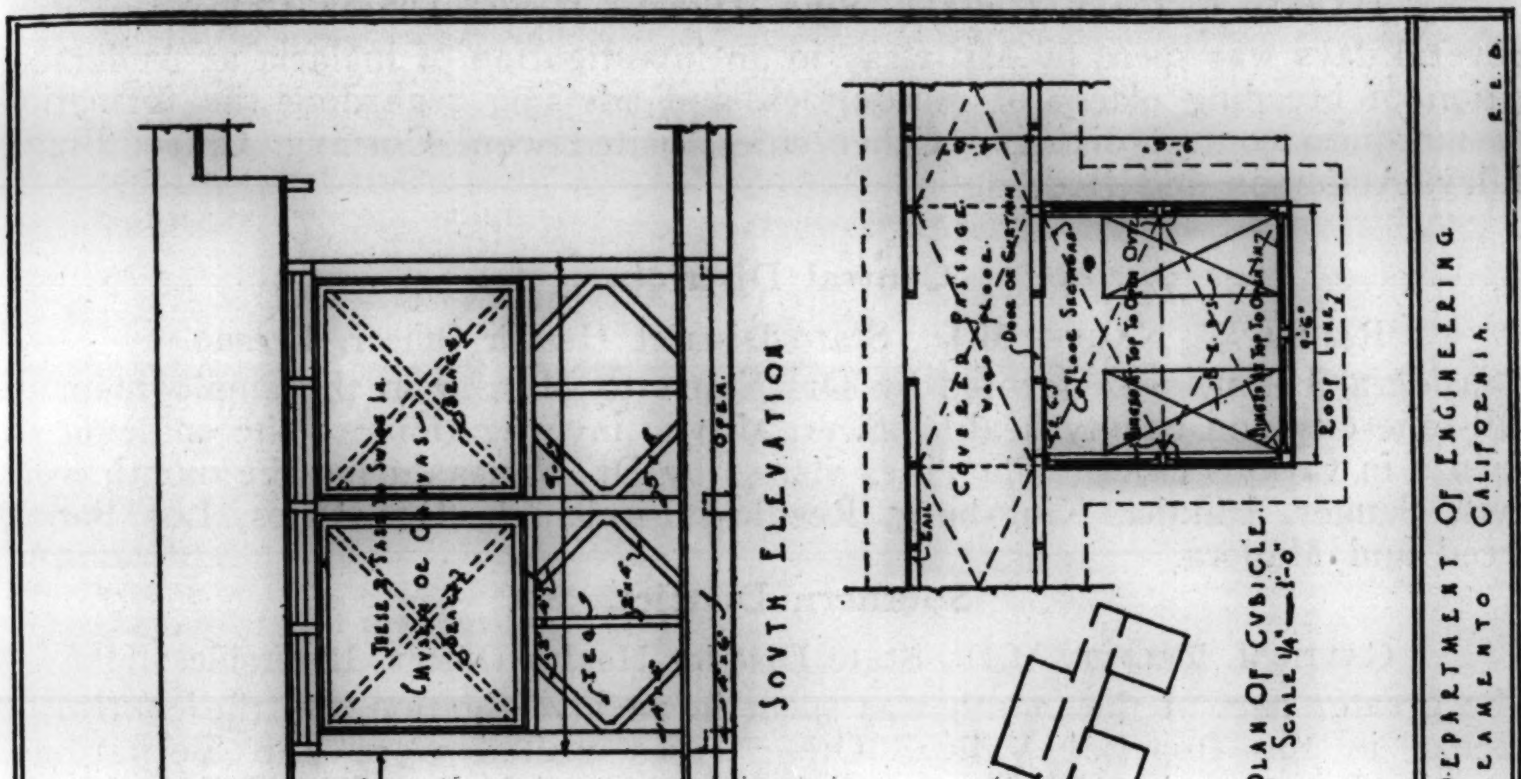


FIG. 18. California State Board of Health plans for emergency hospital for the care of influenza and pneumonia patients.

REPORT OF THE BUREAU OF ADMINISTRATION FOR NOVEMBER, 1918.

W. H. Kellogg, M.D., Director.

ACTIVITIES OF THE STATE DISTRICT HEALTH OFFICERS.

North Coast District.

Allen F. Gillihan, M.D., State District Health Officer, Santa Rosa.

During the month of November Dr. Gillihan was busily engaged in an investigation and control of the smallpox outbreak at Crockett and vicinity. He also investigated a smallpox outbreak at Palo Alto. Other cities visited were Alameda and San Jose.

Northern District.

Harold F. Gray, Gr.P.H., State District Health Officer, Chico.

Several days was spent by Mr. Gray in an investigation of malaria at Anderson, location of breeding places of mosquitoes, and advising regarding the formation of a mosquito control district. Other cities visited were Corning, Chico, Biggs, Gridley, Anderson and Redding.

Central District.

Ralph W. Nauss, M.D., State District Health Officer, Fresno.

Considerable time was devoted by Dr. Nauss to Merced in the employment of a full-time city and county health officer, also in investigations of the epidemic of influenza in various cities. The cities visited by Dr. Nauss during the month were Clovis, Sanger, Dinuba, Kingsburg, Reedley, Firebaugh, Dos Palos, Los Banos, Merced and Madera.

Southern District.

Gavin J. Telfer, M.D., State District Health Officer, Riverside.

The greater part of the month was spent in an investigation and the control of influenza in the Imperial Valley. Other cities visited were San Bernardino, Riverside, Los Angeles, El Centro, Calexico, Imperial, Brawley, Calipatria and Azusa.

South Coast District.

Edward A. Ingham, State District Health Officer, Los Angeles.

Mr. Ingham spent nearly the entire month in influenza control work. The cities visited were Pomona, Claremont, La Verne, San Dimas, Covina, Venice, Azusa and Santa Monica.

SANITARY INSPECTIONS.

Edward T. Ross, State Sanitary Inspector.

The greater part of November was spent in follow-up work. Reinspections were made in South San Francisco, Richmond, Oakland and Alameda. Sanitary surveys were made of these cities and reports, containing recommendations, for the improvement of sanitary conditions, were submitted. The reinspections show that in South San Francisco and Richmond, practically all recommendations have been complied with. In Oakland many of the improvements have been made, and the health officials are making every effort to have all recommendations carried out at an early date. In the city of Alameda all improvements recommended, have been completed. Credit is due the health officials of this city for their prompt action in the abatement of the dilapidated shack restaurants in Work street, in compliance with our recommendations. As a result of the sanitary surveys and reinspections made of these cities, and of the hearty co-operation of the health officials connected therewith, over one hundred and sixty food supply places, eating houses, creameries, bakeries, ice cream parlors, fruit markets, butcher shops, hotels, etc., have been thoroughly cleaned, doors and windows screened, facilities for the sterilization of glassware installed and covered metal garbage receptacles provided. Over three hundred and twenty nuisances were abated.

Reinspections were also made in Benicia, Menlo Park, Palo Alto, Crockett and Antioch. A number of sanitary improvements have been made in these places. Investigations were made of a number of complaints relative to insanitary conditions in various localities. Several special investigations relative to influenza conditions, were made in Burlingame, San Mateo, and Redwood City. Reinspections were made of a number of ferry and river steamers. Conditions in general were satisfactory.

Summary of Operations.

Investigations (influenza)	3
Health conferences attended	2
Miscellaneous complaints investigated	10
Miscellaneous premises inspected	21
Reinspections, food supply places, eating houses, etc.	190
Food supply places, etc., recommendations complied with	163
Facilities for sterilization of glassware installed	102
Food stores, entire fronts closed in with glass or metal screen	9
Metal garbage receptacles procured (approximately)	500
Public schools reinspected	3
Canneries reinspected	3
Ferry and river steamers reinspected	10
Slaughterhouses inspected	2
Nuisances abated	340
Sanitary reports submitted	18

Morbidity for November, 1918, by Weeks.

	Week ending—				Total, Nov., 1918	Total, Nov., 1917
	Nov. 9	Nov. 16	Nov. 23	Nov. 30		
Anthrax		1			1	
Beri-beri						
Cerebrospinal meningitis (epidemic)	3	1		2	6	15
Chickenpox	13	9	13	11	46	524
Cholera, Asiatic						
Dengue						
Diphtheria	45	41	36	55	177	303
Dysentery			1		1	
Erysipelas	4	3	1	4	12	32
German measles	8	2	1	1	12	311
Glanders						
Gonococcus infection	45	33	56	47	181	526
Hookworm						24
Leprosy						1
Malaria	2	2	1	1	6	47
Measles	19	16	16	6	57	360
Mumps	61	31	62	59	213	291
Opthalmia neonatorum						2
Paratyphoid						
Pellagra						
Plague						
Pneumonia	34	82	49	19	184	286
Poliomyelitis	4	2			6	8
Rabies						
Rocky Mountain spotted fever						
Scarlet fever	24	28	31	39	122	327
Smallpox	22	25	21	34	102	16
Syphilis	10	27	49	13	99	212
Tetanus						5
Trachoma	1		2		3	34
Trichinosis						
Tuberculosis	147	117	67	117	448	497
Typhoid fever	5	8	7	6	26	96
Typhus fever						
Whooping cough	24	20	26	15	85	311
Yellow fever						
Influenza	25,280	16,021	10,403	7,257	58,961	
	25,751	16,469	10,842	7,686	60,748	4,228

REPORT OF THE BUREAU OF COMMUNICABLE DISEASES FOR NOVEMBER, 1918.

FRANK L. KELLY, M.D., Director.

Division of Parasitology.

WILLIAM W. CORT, Consulting Helminthologist.

During the month of November a new project of protozoan investigation was undertaken. It has been found by investigations carried on by Mr. J. D. McDonald, assistant parasitologist, that a very high percentage of the pigs slaughtered around the Bay region are infected with Balantidium coli. There are a large number of case records in the literature of Balantidium coli in man. Some of these records indicate that the infection was gained by close association with pigs. To ascertain whether this parasite is spreading to man on the killing floors of the slaughterhouses where the contact with the infected pigs is very close it is proposed to make fecal examinations of such men from the slaughterhouses of the Bay region. One series of twelve examinations has been completed with negative results. Steps to get specimens from the slaughterhouses for further examinations have already been taken.

The project for making fecal examinations in the Delta region to determine whether Oriental parasitic diseases were spreading in California which was initiated two months ago has been delayed from a number of causes. It was found impossible to proceed without some means of water transportation. The proposal to purchase and fit out a houseboat for making the examinations in the field has been approved, and a well constructed houseboat, the Josephine, has been purchased for this project. The boat will be towed into the Delta, anchored at convenient places and the examinations made in the field. It is proposed to make examinations both for intestinal protozoa and intestinal worms of a large number of Orientals living in the Delta region. All factors in the region which might make possible the spread of such diseases will be investigated. It is known that parasitic diseases have been brought into the state ever since immigration from the Orient to California started and it is of great importance to the state to know to what extent such diseases have found conditions favorable to their spread.

The work of the Division of Parasitology is from the nature of the problems attacked to a large extent of a research character. In recognition of this fact a research series of publications has been established for the division. This series will include original papers published by members of the staff of the Division of Parasitology which deal with practical problems. The first of this series is a paper by C. A. Kofoid and M. A. Barber, "Rapid Method for Detection of Ova of Intestinal Parasites in Human Stools" in the Journal of the American Medical Association for November 9, 1918. The method of fecal examination discussed in this paper is called the "brine flotation—loop method," and has been used for the examinations of more than 100,000 soldiers in the Southern Department. The feces to be examined is stirred very thoroughly with a small piece of stick in concentrated brine in a two-ounce can. Sufficient material is used to fill the can about one-third full. After stirring to the desired consistency, a circular filter of No. 0 or No. 1 long fiber steel wool is carefully pushed down through the fluid with the stick to the bottom of the can. This removes ighter coarse float and air bubbles from the surface. The specimen is prepared for microscopical examination by looping off the surface film to an ordinary glass slide. This preparation should be studied without a cover glass since the eggs are found in the surface film. Experiments show that this method is more critical than the centrifuge method. It is by far the most rapid method that has been proposed in which the diagnosis is critical and the apparatus needed is very simple. This method has been adopted by the Division of Parasitology and will be used for the examinations to be made in the Delta region.

Division of Biological Examinations.

Summary of Examinations Made in the California State Hygienic Laboratory During the Month of November, 1918.

Condition suspected	Positive	Negative	Inconclusive	Total
Main Laboratory at Berkeley—				
Anthrax		2		2
Diphtheria (diagnosis)	4	22		26
Diphtheria (release)	3	31	*7	41
Gonococcus infection	10	11	8	29
Influenza		3		3
Malaria		6		6
Meningitis	1	15		16
Pneumonia	2		1	3
Rabies	1			1
Syphilis (Wassermann)	23	166	19	208
Tuberculosis (sputum)	14	26		40
Typhoid (excreta)		1		1
Typhoid (Widal)	3	18		21
Miscellaneous			†3	10
				407
Southern Branch at Los Angeles—				
Diphtheria (diagnosis)	34	63	3 *2	100
Diphtheria (release)	41	59	5 *3	105
Gonococcus infection	6	3	2	11
Influenza			‡1	1
Malaria		1		1
Tuberculosis (sputum)	3	13		16
Typhoid (excreta)		1		1
Typhoid (Widal)	5	3	2	10
School investigation at San Bernardino, 11 diphtheria cultures				11
				256
Northern Branch at Sacramento—				
Diphtheria (diagnosis)	6	7		13
Diphtheria (release)		8		8
Malaria		1		1
Tuberculosis (sputum)	2			2
Typhoid (Widal)		4		4
				28
Total				691

*No growth. †Incomplete. ‡Incomplete, spinal fluid.

	Positive	Negative	Total
Examinations for intestinal worms—			
Miscellaneous		5	5
Trichuris trichiura	1		1
Examinations for intestinal protozoa—			
Balantidium coli		12	12
Entamœba coli	1		1
Totals	2	17	19

Division of Preventive Therapeutics.

Pasteur Treatments for the Prevention of Rabies by the State Hygienic Laboratory, During the Month of November, 1918.

	Treatment commenced	Treatment completed
Main Laboratory at Berkeley	0	0
Northern Branch at Sacramento	0	0
Southern Branch at Los Angeles	0	0
Laboratory of Sacramento Board of Health, by deputized bacteriologist	0	0
Laboratory of San Francisco Board of Health, by deputized bacteriologist	0	0
Laboratory of Los Angeles Board of Health, by deputized bacteriologist	0	0
Laboratory of San Diego City Board of Health, by deputized bacteriologist	0	0
Laboratory of Letterman General Hospital, Presidio, by deputized bacteriologist	0	0
Laboratory of United States Naval Hospital, Mare Island, by deputized bacteriologist	0	0

Vaccine Issued by the State Hygienic Laboratory During the Month of November, 1918.

Typhoid vaccine:	
Number of physicians to whom vaccine was sent	1
Number of complete treatments sent	5
Mixed typhoid paratyphoid vaccine:	
Number of physicians to whom vaccine was sent	7
Number of complete treatments sent	33
Influenza vaccine:	
Number of physicians to whom vaccine was sent	192
Number of treatments sent	7148

Ophthalmia Neonatorum Prophylactic Outfits Distributed During the Month of November, 1918.

Number of outfits, containing two ampules each, issued	1247

Public Health Instruction.

Participation in Instruction in Public Health During November, 1918.

Main Laboratory at Berkeley:	
Bacteriological instruction outfits sent out	0
Bacteriological instruction outfits in use	20

REPORT OF THE BUREAU OF TUBERCULOSIS FOR NOVEMBER, 1918.

E. L. M. TATE-THOMPSON, Director.

The recent meeting of the Southwestern Conference in Denver brought together prominent Red Cross and tuberculosis workers from all over the Southwest.

The problem of the migratory indigent consumptive has always been of vital concern to social workers in the Southwest. The lure of climate, in spite of all that has been said, still remains a rainbow of hope to those whom the white plague has touched, and if the Southwest has not been able to do more for the migratory indigent the fault lies, not with the Southwest but with the locality from which the patient came. That the proof of this is true, last year when hundreds of men were being discharged from a camp in California, the Bureau of Tuberculosis stationed a special worker in the camp to tell the men from other states what provision could be offered them at home and in most instances they had never heard of the institutions in their home state. An exhibition was prepared, consisting mostly of photographs showing various sanatoria throughout the country.

The campaign of education needs to be extended to the great middle class, whose members can not afford the expensive private institutions and yet who do not learn of the public ones, until all their money is spent. Public institutions such as libraries, public schools, and even asylums and jails occupy a unique position in this country; prince or pauper, you may borrow books, attend the public school, or if you lose your mind or need to be committed to jail no one needs, in most cases, to be legally liable for your support. But, in most states, if you contract tuberculosis the way lies open, if you have saved a little money, through two avenues: first, spend the savings in a private institution far beyond your means and when that is exhausted, try then to secure admission to a county or state institution. What we need everywhere is to break the barrier that stands at the door of most of the million dollar public institutions, *i.e.*, give the patient a chance to pay his way. It will then be possible to preach tuberculosis control.

The private institutions will not suffer; one has only to attempt to place patients in them in the Southwest to appreciate the fact that the very rich as well as the very poor must go on the waiting list.

Los Angeles, Kern, Alameda, Sacramento, Yolo, Amador, Contra Costa, Eldorado, Sutter, Colusa, Plumas and Yuba counties as well as Merced, Stanislaus, Madera and San Diego, Kings and Tulare counties all have institutions now, where patients who are able to pay ten dollars a week are allowed to enter.

Meetings are being planned by the National Tuberculosis Association and the Red Cross, to be held at various points in the Southwest during the winter. The negro in the Southwest, particularly Texas; the Mexican in New Mexico and Arizona; and the Indian in California, are to be discussed and a comprehensive plan worked upon.

The government will have thousands of beds available after a period of years. What will become of them, is a question that interests the Southwest. Perhaps the great 10,000-bed institution outside of Denver may be the solution to the migratory consumptive, but as yet he remains the greatest problem in tuberculosis control.

The bureau is planning after the Christmas Roll Call, to enlist again the services of the Red Cross workers, whose help was so invaluable during the epidemic, in a survey of each of the cities, where emergency hospitals were established to have at least one visit made to ascertain what kind of a recovery the patient has made. Adequate relief in the majority of the hundreds of cases means restored health; inadequate relief means a lowered vitality and better soil for the insidious tuberculosis germ to flourish.

The bureau's field worker spent two weeks at the San Bernardino County Tuberculosis pavilion.

Hospitals Inspected.

San Bernardino
Resthaven
Los Angeles
Kings and Tulare
San Diego

REPORT OF THE BUREAU OF SOCIAL HYGIENE FOR NOVEMBER, 1918.

LEWIS MICHELSON, M.D., Director.

Arsenobenzol Distributed by the Bureau During November, 1918.

Los Angeles Health Department (city)	200
San Francisco Health Department	100
Los Angeles County Health Department	50
Boyle Avenue Dispensary, Los Angeles	24
San Mateo County Health Officer	6
College of Physicians and Surgeons, San Francisco	5
Siskiyou County Health Officer	3
F. H. Hadley, San Francisco	3
Total	391

Treatment reports received:

118	patients received one dose	118
64	patients received two doses	128
32	patients received three doses	96
16	patients received four doses	64
10	patients received five doses	50
1	patient received six doses	6
2	patients received seven doses	14
243		476
	Ampoules wasted	2
		478

Other occupations	87
Housewives	64
No occupation	40
Laborers	29
Students	15
Prostitutes	8
	243
Females	145
Males	98
	243

Patients treated:

San Francisco Health Department	84
Temple Block Clinic, Los Angeles	48
Los Angeles County Hospital	47
Los Feliz Hospital, Los Angeles	29
Los Angeles Juvenile Hospital	12
Los Angeles East Side Jail	6
Boyle Avenue Dispensary, Los Angeles	5
Stanford University Clinic, San Francisco	4
Stanford Medical School, San Francisco	3
San Diego County Hospital	2
Redwood City Detention Home	1
Alameda County Hospital	1
F. H. Hadley, San Francisco	1
	243

Total number of arsenobenzol ampoules distributed		5,330
Total number of treatment cards received	4,212	
Total number of treatment cards distributed and not returned	1,118	
	5,330	

REPORT OF THE BUREAU OF VITAL STATISTICS

GEORGE D. LESLIE, Director.

Births, Deaths and Marriages for November.*

State, Totals and Annual Rates. The following table shows for California as a whole, the birth, death and marriage totals for the current month of the year to date in comparison with corresponding figures for last year, as well as the annual rates per 1,000 population represented by the totals for the current month and the year to date. The rates are based on an estimated midyear population of 3,129,584 for California in 1918, the estimate having been made by the United States Census Bureau method with slight modifications.

Birth, Death and Marriage Totals, with Annual Rate per 1,000 Population, for Current Month and Year to Date, for California: November.

Month or period	Total		Annual rate per 1,000 population, 1918
	1918	1917	
November—			
Births	4,526	4,310	17.6
Deaths	9,768	3,438	38.0
Marriages	1,999	3,184	7.8
January to November—			
Births	50,739	46,578	17.7
Deaths	50,106	38,022	17.5
Marriages	30,034	32,417	10.5

---

*The present report is for the month preceding but one. This order must be followed because of the publication of the Bulletin during the early part of the month, before the tabulation of records for the next preceding month is completed.

The above totals show a slight increase in births for November, 1918, over November, 1917; a startling increase in deaths, due to the prevailing epidemic; and a decided drop in marriages.

A comparison of the first eleven months for 1918 with the same period for 1917 shows an increase of 4,161 births, and of 12,084 deaths, with a decrease of 2,383 marriages.

Length of Residence. The length of residence in California for the 9,768 decedents in November was as follows: Under 1 year, 893, or 9.1 per cent; 1 to 9 years 2,371, or 24.3 per cent; 10 years and over, 3,083, or 31.5 per cent; life, 2,958, or 30.3 per cent; and 465, or 4.8 per cent.

County Marriage Totals. The counties showing the highest marriage totals for the month were as follows: Los Angeles, 451; San Francisco, 360; Alameda, 176; San Diego, 125; Sacramento, 80; Orange, 76; Santa Clara, 72; San Bernardino, 62; San Joaquin, 55; Fresno, 51; Riverside, 39; Marin, 30; Sonoma, 28; and Santa Barbara, 27. The aggregate for Los Angeles and Orange counties together was 527, against 610 for San Francisco and other bay counties.

County Birth and Death Totals. Exclusive of stillbirths in both cases, the birth and death totals for the month were as follows for the leading counties, arranged in decreasing order of birth registration:

County	Births	Deaths	County	Births	Deaths
Los Angeles	1,083	2,281	Kern	95	234
San Francisco	701	1,369	Tulare	92	114
Alameda	503	805	Orange	87	202
Fresno	190	292	Contra Costa	79	171
San Diego	176	355	San Bernardino	75	299
Santa Clara	167	269	Stanislaus	69	66
Sacramento	123	484	Monterey	63	84
San Joaquin	107	411	San Mateo	61	104

City Birth and Death Totals. Birth and death totals, exclusive of stillbirths, are presented similarly for the principal California cities below:

City	Births	Deaths	City	Births	Deaths
Los Angeles	713	1,533	San Jose	61	91
San Francisco	701	----------	Stockton	54	328
Oakland	359	494	Bakersfield	50	133
San Diego	138	207	Pasadena	47	79
Sacramento	96	414	Alameda	42	58
Fresno	76	115	San Bernardino	30	72
Berkeley	66	88	Santa Ana	27	32
Long Beach	64	88	Richmond	25	35

Causes of Death. The following table shows the classification of deaths in California for the current month, in comparison with the preceding month:

Deaths from Certain Principal Causes, with Proportion per 1,000 Total Deaths for Current and Preceding Month, for California: November.

Cause of death	Deaths, November	Population per 1,000	
		November	October
All causes	9,770	1,000.0	1,000.0
Typhoid fever	8	0.8	----------
Malarial fever	3	0.3	----------
Smallpox	----------	----------	----------
Measles	2	0.2	----------
Scarlet fever	2	0.2	----------
Whooping cough	17	1.7	----------
Diphtheria and croup	16	1.6	----------
Influenza*	5,702	583.6	----------
Other epidemic diseases	8	0.8	----------
Tuberculosis of lungs	464	47.5	----------
Tuberculosis of other organs	36	3.7	----------
Syphilis	25	2.6	----------
Cancer	273	27.9	----------
Other general diseases	109	11.1	----------
Meningitis	17	1.7	----------
Other diseases of nervous system	388	39.7	----------
Diseases of circulatory system	626	64.1	----------
Pneumonia and broncho-pneumonia*	803	82.2	----------
Other diseases of respiratory system	75	7.7	----------
Diarrhea and enteritis, under 2 years	79	8.1	----------
Diarrhea and enteritis, 2 years and over	27	2.8	----------
Other diseases of digestive system	194	19.6	----------
Bright's disease and nephritis	207	21.2	----------
Childbirth	24	2.5	----------
Diseases of early infancy	208	21.3	----------
Suicide	66	6.8	----------
Other violence	280	28.7	----------
All other causes	111	11.4	----------

***Influenza and pneumonia (combined), 6,505 deaths, or 665.8 per 1,000, for November against 617.0 for October.**

There were 5,702 deaths from influenza reported for the month, and 803 deaths from pneumonia in its various forms, making a total of 6,505 together.

There were 626 deaths, or 6.4 per cent of all in November, from diseases of the circulatory system; and 500, or 5.1 per cent, from the various forms of tuberculosis.

Other notable causes of death in November were as follows: Diseases of the nervous system, 405; violence (includes suicides, accidents, etc.), 346; diseases of the digestive system, 300; cancer, 273; Bright's disease and nephritis, 207; and epidemic diseases (except influenza), 56.

The deaths from the three leading epidemic diseases, excepting influenza, reported for the month were distributed by counties as follows:

Whooping cough		Diphtheria		Typhoid fever	
Alameda	2	Alameda	2	Alameda	1
Butte	1	Fresno	1	Kern	1
Kings	1	Los Angeles	7	Los Angeles	2
Los Angeles	5	Riverside	1	Monterey	1
Monterey	1	Sacramento	1	Riverside	1
San Bernardino	1	San Francisco	1	Sacramento	1
San Francisco	2	San Joaquin	1	San Francisco	1
San Luis Obispo	1	San Luis Obispo	1		
Santa Barbara	1	Sutter	1		8
Tulare	2		16		
	17				

The following table shows the number of deaths from influenza and pneumonia for certain population groups reported for November:

Population group (census of 1910)	Deaths from influenza and pneumonia
Cities 5,000 and over	3,650
Cities 2,500 to 5,000	487
Towns under 2,500	779
Rural districts	1,311
Institutions	278
Total	6,505

The deaths from influenza and pneumonia reported for November were as follows for cities of 5,000 population in 1910:

City	Deaths from influenza and pneumonia	City	Deaths from influenza and pneumonia
Los Angeles	1,023	Alameda	29
San Francisco	830	San Jose	29
Sacramento	320	Richmond	28
Oakland	297	Santa Rosa	25
Stockton	257	Santa Ana	21
San Diego	133	Santa Monica	21
Bakersfield	109	Napa	19
Fresno	83	Santa Barbara	19
Vallejo	53	San Rafael	15
Berkeley	51	Pomona	13
San Bernardino	49	San Luis Obispo	13
Marysville	47	Petaluma	10
Long Beach	38	Santa Cruz	8
Eureka	35	Alhambra	5
Pasadena	35	Redlands	3
Riverside	32		

Sex, Race and Nativity. The proportion of the sexes among the 9,770 decedents in November was: Male, 6,152, or 63.0 per cent; and female, 3,618, or 37.0 per cent.

The race distribution was: White, 9,140, or 93.6 per cent of all; Japanese, 329; Chinese, 131; Negro, 104; and Indian, 65.

The 9,140 white decedents were classified by nativity as follows: California, 2,793, or 30.6 per cent; other states, 2,987, or 32.7 per cent; foreign countries, 3,039, or 33.2 per cent; and unknown, 321, or 3.5 per cent.

Infant Mortality. There were 621 deaths for children under 1 year which were distributed by age in months as follows: Under 1 month, 242, or 39.0 per cent;

1 to 2 months, 82, or 13.2 per cent; 3 to 5 months, 117, or 18.8 per cent; and 6 to 11 months, 180, or 29.0 per cent. In certain cities the deaths under 1 year were as follows: Los Angeles, 92; San Francisco, 64; and Oakland, 38.

The 621 deaths under 1 year in comparison with the 4,527 live births reported for the month, show an infant mortality ratio of 137 per 1,000.

For the same month last year there were 314 deaths under 1 year of age, which, compared with the 4,310 live births reported, made an infant mortality ratio of 73 per 1,000.

REPORT OF THE BUREAU OF SANITARY ENGINEERING FOR NOVEMBER, 1918.

By C. G. GILLESPIE, C.E., Director.

Clyde F. Smith, assistant engineer, and Ray F. Goudey, engineering assistant, have this month been commissioned in the Sanitary Corps. Their departure brings the number of field men leaving the bureau for army service up to four and leaves but two field men to carry on the work of the bureau.

SEWAGE DISPOSAL.

Applications for Permit Filed—None.

Permits Granted—None.

Plans Filed.

Brentwood. Plans of proposed sewerage.

Investigations, Inspections, Reports and Conferences.

Agnew. November 26. The community has no sewerage and privies are in general use. Ground water level is high and contents flood entire vicinity in winter. Advised requiring chemical closets or the construction of water-tight vaults reaching above ground and fly-tight housing, with use of chloride of lime to keep down odors. Also that water-flushed toilets be not installed on account of the difficulty of sewage disposal.

Kings City. November 29. Sewerage has been installed recently, disposal being through a septic tank disproved by this bureau into a seep hole. Conditions are bad but no complaints have apparently yet been made.

Taft. November 30. About half the city is sewered, disposal being through a septic tank into a wash less than a half a mile from town. Gross nuisance is complained of. Suggested sewer farming in the granitic formation in the vicinity.

Arcadia. November 6 and 14. Reinspections of sewage disposal at Army Balloon School. Persons living near the irrigated area have entered complaints of odors. The septic tank effluent has a marked odor at times and it appears the objections may be well grounded. Satisfactory disposal on land here can be accomplished only with a fresh effluent. It has been suggested that irrigation with raw sewage be tried. The feasibility of extending the outfall sewer to connect with the sewer system of Monrovia, about 2½ miles away, is being investigated.

Pasadena. November 6 and 25. Reinspections of experimental testing plant. A modified type of activated sludge plant, designed by Trent Engineering Company and modeled after the Trent mine-slime concentrator, was recently put into operation. It is handling about 35 gallons per minute. It consists of four circular tanks about 8 feet diameter and 15 feet deep; first three are aerating tanks and fourth is for settling and thickening. Sewage passes successively through the four tanks, a portion of sludge accumulated in last being returned to first. A circulating pump for each tank takes its suction about 4 feet below water surface and discharges into bottom through nozzles attached to horizontal radial arms that are slowly revolved by the discharge of water. The pumps on the three first tanks draw air into suctions. The last tank is not aerated. In this tank the overflow from tank No. 3 is admitted through a central inverted cone which terminates about 4 feet below surface. The final effluent overflows a weir around top of last tank. At time of inspection excellent aeration was being obtained, but considerable sludge was going over with effluent. Improved results are expected with experience in manipulation. The principal claim of the designers is that a sludge of low water content can be produced, as has been done by their apparatus in handling mine slimes.

San Antonio Canyon. November 21. A sewer to serve the Edison power plant is proposed and a visit was made to advise regarding disposal. Sedimentation in a small tank and final disposal in a cesspool about 300 feet from the river was advised.

Ontario. November 21. Reinspection of sewer farm. City owns about 180 acres sandy land on which raw sewage of Ontario and Upland is disposed of by irrigation. Disposal satisfactory. Land leased for twenty-five years to private parties.

Colton. November 22. Reinspection of sewage disposal. Sewage used for irrigation of privately owned land, about 40 acres north of Santa Ana River and about 40 acres south. No treatment of sewage. Disposal satisfactory.

Chino. November 22. Reinspection of Imhoff tank and sewer farm. Lack of attention was apparent but no nuisance prevailed. Sewage appears to be very weak and tank effluent is clear and nonodorous, notwithstanding heavy scum accumulation in flow channels. The 20-acre farm is not in crops and water was spreading without control. It disappeared, however, within a comparatively small area. This farm is underdrained. A strong flow was issuing from the main drain. It was very clear and probably consisted largely of ground water.

WATER SUPPLIES.

Applications for Permit Filed.

Santa Maria. To supply water from wells.

Permits Granted.

Folsom, Natomas Water Company. A permit to supply water to the inhabitants of Folsom, revocable on violation of any of the following provisions:

1. The supply, as delivered to the consumers, shall be potable, suitable for domestic uses and safe, bacterially, at all times.
2. Chlorination shall be kept efficient and effective at all times and shall not be discontinued except with the specific approval of the State Board of Health. Failure in operation shall be reported at once to the State Board of Health and to the local health officer.
3. Report of operation, acceptable to the Bureau of Sanitary Engineering, shall be submitted to that bureau at its direction.
4. Samples shall be collected at such times and points as the Bureau of Sanitary Engineering shall direct.
5. No material additions or modifications in works or systems shall be undertaken without the approval of the State Board of Health, as prescribed in chapter 754.

Healdsburg. A permit to continue the use of the present source of supply, provided that the supply as delivered be maintained safe and sanitary, that no new wells or important additions or alterations in the works or system shall be made without the specific approval of the State Board of Health and that all failures of operation of the chlorinator be reported at once to the State Board of Health and to local health officer so that proper steps may be taken to protect the health of the community.

Hercules, Hercules Water Company. A permit to supply water to the inhabitants of Hercules, Pinole and outside points in Contra Costa County from its San Pablo wells and from Pinole Creek, with the following provisions:

1. That Pinole Creek shall be continuously and effectively disinfected when in use and for this purpose the company will detail an operator to remain at the chlorinator while it is in operation and see that these results are obtained. The company shall file weekly reports of operation of this chlorinator on forms to be prescribed by this bureau. In the event of interruption in chlorination, local health officers and the State Board of Health shall be notified at once so that proper steps may be taken in lieu of chlorination.
2. That samples of the supply shall be taken whenever and wherever requested by this board.
3. That the Pinole Creek supply shall be abandoned whenever another supply of better sanitary quality is available.
4. That no material additions or modifications in sources of supply or system shall be undertaken without the specific approval of the State Board of Health, as prescribed in chapter 754.

Livermore, Pacific Gas and Electric Company. A permit to supply water from the Los Positas wells and, in emergency, from the Arroyo Mocho Creek.

Napa, Napa City Water Company. To continue to supply water from existing sources with the understanding that the Napa River water is not to be admitted to the system and with the provisions that the supply is delivered, established and maintained safe and sanitary.

Oakdale. A permit to continue the use of present sources, provided that the supply be maintained healthful and sanitary and that no new wells or important additions or alterations in the works or system shall be made without the specific approval of the State Board of Health, as prescribed in chapter 754.

Oxnard. A permit to continue the operation of its water system as it now exists on condition that the supply be maintained safe and sanitary.

Paso Robles. A domestic water supply permit to continue the use of its well on condition that the supply be maintained healthful and sanitary and that no new wells or material modifications or additions to works or system be undertaken without the approval of the State Board of Health, as prescribed in chapter 754.

Porterville. A permit to supply water from the existing wells and works.

Reedley. A permit to continue the use of its present well supply, with provisions for maintaining its sanitary quality and the securing of approval of all future additions to the system.

Salinas, Coast Valleys Gas and Electric Company. A permit to supply water for domestic uses to the inhabitants of Salinas from four existing wells; certain precautionary provisions are named.

South San Francisco, South San Francisco Water Company. A permit to continue to supply water to the city of South San Francisco, provided that the supply be maintained safe and sanitary and that no new wells or important additions or alterations in the works or system shall be made without the specific approval of the board.

Sunnyvale. A permit to continue the use of its present water supply, provided that the supply be maintained healthful and sanitary and that no new wells or important additions or alterations in the works or system shall be made without the specific approval of the State Board of Health.

Ventura, Southern California Edison Company. A permit to supply water for domestic purposes from the "Mound Plant" and a temporary permit to supply water from Ventura River, pending observation of the success with which the water is chlorinated; and with the further provision that no material additions or modifications be made in the system without the approval of the board.

Pending inspection by a representative of this bureau, temporary permits were granted as follows:

Dorris
Ferndale, The Francis Land and Water Company
Fort Bragg
Fortuna, Fortuna Water Company
Gustine
Hollister, Hollister Water Company
Lakeport
Lindsay
Mayfield
Montague
Mountain View
Morgan Hill
Newman, Newman Water Works Company
Riverbank, Riverbank Water Company
Sanger
Santa Clara
Santa Monica
Sebastopol
Stockton, Pacific Gas and Electric Company
Tulare
Ukiah, Ukiah Water and Improvement Company
Willits, Willits Water and Power Company
Winters
Woodland
Yuba City

Eureka. A temporary permit to supply water from the Elk River on the following conditions, pending completion of remedial measures as here enumerated:

1. The treatment of the supply as at present shall be continued to produce a clean, clear, potable and safe water at all times.
2. The coagulating basin capacity shall be at least doubled.
3. There shall be a duplicate and independent arrangement provided for the disinfection of the supply. Both measures 1 and 2 shall be completed within a reasonable time.
4. Efforts shall be made to eliminate the "red water plague."
5. Daily bacteriological, chemical and physical tests shall be continued and reports of such tests and reports on daily operation shall be submitted to this board, as heretofore.
6. Chlorination shall not be discontinued except on telegraphic announcement to the State Board of Health and local health department so that proper steps can be taken in lieu of chlorination.
7. The city shall begin at once the investigation of alternative supplies.
8. No material additions or modifications in source or treatment shall be undertaken without the specific approval of the State Board of Health, as prescribed in chapter 754.

Oroville, Pacific Gas and Electric Co. Temporary permit to supply water from existing sources with the provision that:

1. The chlorinator be equipped with a proper gauge and scales and that it be kept in continuous operation.
2. A daily record of operation be kept; a copy to be forwarded to this bureau at weekly intervals for inspection.
3. Samples be taken at points as specified by this bureau, at an interval as prescribed.
4. No material additions or modifications be made in the works or system without the previous approval of the State Board of Health, as prescribed in chapter 754.

Pleasanton. A temporary permit to continue use of present source of supply, pending the taking of more samples and completion of the following improvements:

1. At the old wells a concrete curb be placed around the two isolated wells in order to prevent the entrance of surface wash.
2. At the new wells some permanent form of top be placed over the wells that should be locked so that it would be impossible for anyone to gain access to them without authority.
3. Around the 12-inch casing that extends up into the 24-inch casing a layer of concrete be placed to prevent the entrance of surface wash into the well; and with the further provision that no new wells or important additions or alterations in the works or system shall be made without the specific approval of the State Board of Health.

Yreka. A temporary permit to continue the use of present sources of supply, to permit the execution of the following improvements:

1. The reservoir should be covered with some form of cover which will exclude the light and at the same time permit a free circulation of air. This is necessary to stop the growth of algæ which occurs as a result of taking an underground water and exposing it in a quiescent condition to the sunlight.
2. The reservoir should have a central partition which will permit occasional cleaning without entirely interfering with a reserve for fire purposes.
3. The open privy on the bank of the creek above the pumping works should be abolished.

Plans Filed—None.

Investigations, Inspections, Reports and Conferences.

Grimes, Mr. G. L. Saunders. November 18. Spent the day placing an emergency hypochlorite outfit in operation. The supply is pumped from the Sacramento River, a grossly polluted stream, into an elevated tank from which it is distributed. The solution is fed into the pump suction.

Colusa. November 18. Supply is obtained from deep wells of excellent construction to preclude contamination, but city maintains a standby connection with the Sacramento River. It was requested that the gate on this line be kept under lock by the health officer and that a standby hypochlorite plant be maintained.

Lincoln. November 19. Water is obtained from a ditch, passed through several basins en route to city. Arrangements were made for initiation of regular sampling.

Roseville, Roseville Water Company. November 19. Supply is a ditch water passed through several basins en route to city. A crude hypochlorite arrangement is maintained at the headworks, but inspection showed it to be out of commission. Directed that a workmanlike concrete hypochlorite disinfecting plant be substituted and operated conscientiously.

Hollister, Hollister Water Works. November 27. Supply is obtained from a series of wells seven miles from town, about 100 feet deep, reaching to a granitic gravel. Water is collected in a tunnel and run by gravity, or it may be pumped from the wells in summer, through a small sand catcher to a large service reservoir near Hollister. Supply has been wisely developed from every standpoint. Analyses show it to be an excellent water. Standby supplies of inferior quality are obtained from an uninhabited gulch near their wells and from a well installation near Hollister.

Gilroy. November 27. Supply is obtained by pumping from wells in Gilroy or from Uvas Creek about seven miles from town and is run to a large basin holding about two months' supply. Uvas Creek water is said to be shut out while turbid as well as in summer when heavily grown with algæ. The basin is poorly designed to make it effective in purifying the water by storage as the waste weir is near the outlet and further, the outlet is not so located as to afford the maximum distance of travel from inlet to outlet. Fresh water crawfish have been used to keep down algæ growths in the reservoir. It is said that the sides have thus been kept free of algæ and the water has been greatly improved in summer as a result.

Taft, Western Water Company. November 29. Supply is pumped from deep wells near Rio Vista Slough, 14 miles from Taft, passed through a sand catcher and pumped to Taft and the oil fields. Supply is safe but highly mineralized.

Monterey Park. November 11. Source of supply is two drilled wells about 500 feet deep, one of which yields water with strong sulphur odor. Complaints of odors in water were recently made and water company was advised to install an aerating table to remove the hydrogen sulphide.

Covina. November 14. Water derived from San Gabriel River which is subject to contamination. City recently purchased a dry-feed liquid chlorine machine, but satisfactory operation had not been attained at time of visit, due to improper installation.

Ontario and Upland. November 21. Supply derived mainly from San Antonio River. Reinspection made of resorts and camps in canyon. Opportunities for sewage contamination appear to be quite well eliminated.

LABORATORY WORK.

The following is a summary of the work done by the laboratories of the Bureau of Sanitary Engineering for November, 1918:

Los Angeles Office:	
Bacteriological examinations of water	81
Berkeley Office:	
Bacteriological examinations of water	213
Bacteriological examination of sewage	1
Chemical examinations of water (partial)	214
Sanitary chemical examinations of water	15
Total samples submitted	230

REPORT OF THE BUREAU OF FOODS AND DRUGS FOR NOVEMBER, 1918.

E. J. Lea, M.S., Director.

One hundred and thirty-nine samples were received at the laboratory during the month of November. The official samples consisted of cheese, condiments, eggs, egg substitutes, fish, fruit, jam, liquors, meats, milk, oils, sauerkraut, syrup, vegetables and disinfectants.

The unofficial samples consisted of casein, cheese, coffee substitutes, condiments, eggs, fish, flour, fruit, jelly, marmalade, milk, prunes, vegetables.

Three samples from state institutions were received, these being coffee and syrup.

CASES REFERRED TO DISTRICT ATTORNEYS.

The following cases were referred by the State Board of Health, at the November meeting, to district attorneys for prosecution:

Broderick—O. Sunahara, tomatoes. *Dixon*—T. Egusa & Y. Araishi, tomatoes. *Hayward*—Pacific Vinegar and Pickle Works, tomato catsup. *Los Angeles*—Seventh Avenue Pharmacy, tincture iodine, essence of peppermint, camphorated oil and glucerine. *Marysville*—Brown & Gray, Inc., banana syrup. *Oakland*—Cudahy Packing Co., eggs; Landregan & White, gin; Lekos Brothers, eggs; Pacific Coast Canning Company, tomato puree; Rose Valley Poultry Exchange, eggs. *Sacramento*—John Ong, tomatoes. *San Francisco*—Al Grocery Company, eggs; Crown Commission Company (guarantor), eggs; Daneri Brothers and Company, dried mushrooms; Hunter Bar and Cafe, brandy and gin; Makins Produce Company (guarantor), eggs; North American Mercantile Company, canned crab; Yoshida Brothers and Company (guarantor), canned crab. *San Luis Obispo*—Pflegharr & Anderson, gin and whiskey; Paiarola's Bar, whiskey. *Santa Monica*—Marine Meat Market (guarantor), chopped meat; Powley's Market, chopped meat. *Suisun*—William Pierce, tomatoes. *Venice*—Decatur Buffet Company, brandy and whiskey.

CONVICTIONS UNDER FOODS AND DRUGS ACTS REPORTED DURING NOVEMBER, 1918.

There were twenty-three convictions obtained during the month of November, a total of $145 in fines being imposed. Following is a list of the violators:

Alameda—John C. Croll, whiskey, fined $5. *Emeryville*—Bridges Bros., whiskey, fined $5; Fred Ohe, Fernet Branca, fined $5. *Monterey*—K. Hovden & Company, tomato puree, fined $25; Bay Side Fish Company, tomato puree, fined $25. *Oakland*—A. E. Anastasion, strawberry syrup, fined $5; Fred Hayes, sausage, fined $5. *San Francisco*—Ashbury Bar, H. Gerken, proprietor, gin, fined $5, and whiskey, guilty, O. R. 6 months; California Bakers' Supply Company, P. Frund, proprietor, Egg-O-Lene, guilty; Garbini Bros. & Company, anchovies, guilty—material destroyed; Midnight Follies Bar, whiskey, guilty; Oasis Bar, J. Arees, proprietor, gin and whiskey, guilty, O. R. 6 months; Pup Cafe, Geo. P. Maloney, proprietor, brandy, fined $10, whiskey, fined $10 and gin, guilty, O. R. 6 months; Otzen Packing Company, walnut meats, guilty, material destroyed; Pacific French Wine Company, brandy, fined $20; Yoshida Bros., canned crab, guilty, O. R. 6 months. *San Leandro*—Grove Meat Market, Mrs. L. A. Eber, proprietor, pork sausage, fined $5.

ARTICLES OF FOOD CONDEMNED.

The following articles of food, condemned upon physical and chemical examination as unfit for food, were destroyed or denatured during the month of November, 1918:

Anchovies—1,925 pounds, Barbini Bros., San Francisco. Catsup—12,000 bottles, Pacific Vinegar and Pickle Works, Hayward. Catsup—9,866 pounds, Dodson Company, Los Angeles. Catsup—7,014 pounds, Dodson Company, Los Angeles. Chard—360 cans, Blanco Canning Co., Oakland. Peanuts—2,000 pounds, California Peanut Co., Oakland. Tomatoes—100 boxes, Hood Canning Co., Emeryville. Tomato Paste—15,125 pounds, American Olive Co., Los Angeles.

REPORT OF BUREAU OF REGISTRATION OF NURSES FOR NOVEMBER.

Kate S. Douglass, Assistant Inspector of Schools of Nursing.

The widespread epidemic of influenza has continued during the past month to render inspection of nursing schools very difficult. It has thrown an apalling burden on our hospitals and the student force in connection with them. Many of the staff have been ill, and many of the pupils, making class work of any kind an impossibility. The first duty was to the patients, and with depleted forces all nursing work was heavy. Schools are now just beginning to consider class work again, and to formulate plans for their reorganization.

Miss Grant, acting director, was granted a leave of absence from the bureau by the State Board of Health during the epidemic, in order that she might assist where needed in arranging for caring for the many stricken with influenza. Her work during this time was principally the inspection of the emergency hospitals, as to their organization especially, and to ascertain the status of the emergency work in general in the small towns. During Miss Grant's absence from the bureau, Miss Eyre, Assistant Inspector of Schools of Nursing in the north, was in the office in Sacramento and carried on her work.

The lifting of the quarantine in Los Angeles December 2 has enabled the bureau to arrange to hold the postponed State Board examinations for registration for the south on December 11 and 12. This will enable nurses, whose plans had been very much disarranged by the postponement of the October examinations, to carry out their original plans without sacrificing their examinations.

To take an examination is a trying procedure for anyone, but even bearing this in mind, the results of some of the examinations were very disappointing. There seem to be an unnecessary number of papers, which showed a lack of preparation in fundamentals, and lack of thoroughness in practical nursing procedures. Perhaps one conclusion to be drawn is that the plan of lecturing to a class, without opportunity for quiz, as used in many small hospitals, is not very satisfactory. The student has no opportunity to correct erroneous impressions, nor to observe her mistakes.

Possibly a few of the answers may be enlightening. The reason the first urine voided is thrown away in collecting a twenty-four hour specimen is "I have never done it, but will inquire about it."

"If a patient voids a little every once in a while, it means suppression."

"In suppression, the bladder is full, but the kidneys can not secrete."

"Pasteurization is a process carried out by one not connected with the sale of it."

"In pasteurizing, it is necessary to heat milk to four-hundred degrees."

One said, "Quiet surroundings were the only preventive of ear trouble following scarlet fever."

The University of Southern California has made arrangements for offering an intensive prenursing course for students wishing to enter schools of nursing with advanced standing. This course will be open to students at the beginning of the next semester, the middle of February. This course will follow closely the work as outlined for Vassar Training Camp last summer. It has been arranged in response to urgent requests from Washington, as the Surgeon-General has approved a plan by which the American Council on Education is to co-operate with selected colleges in establishing intensive prenursing courses to be repeated throughout the year.

LIST OF COUNTY AND CITY HEALTH OFFICERS.

Alameda County—
Dr J. Hal Cope--------Pleasanton
Alameda-----------Dr. A. Hieronymus
Albany---------------Dr. J. F. Diddle
Berkeley--------------Dr. J. J. Benton
Emeryvile-----------Dr. A. T. Drennan
Hayward----------Dr. F. W. Browning
Livermore------------Dr. J. K. Warner
Oakland------------Dr. Daniel Crosby
Piedmont----------Dr. Benj. T. Mouser
Pleasanton------------Dr. J. Hal Cope
San Leandro--------Dr. Luther Michael
Alpine County—
——— ———---------Markleeville
Amador County—
Dr. G. L. Lynch------Amador City
Jackson---------------------H. E. Kay
Plymouth-----------------W. J. Ninnis
Sutter Creek-----------T. W. Trudgen
Butte County—
Dr. L. L. Thompson-------Gridley
Biggs-------------------Sarah J. Hiett
Chico------------------W. H. Marshall
Gridley------------Dr. L. Q. Thompson
Oroville--------------Dr. W. F. Gates
Calaveras County—
Dr. George F. Pache, Angels Camp
Angels Camp--------Dr. E. W. Weirich
Colusa County—
Dr. G. W. Desrosier--------Colusa
Colusa------------Dr. G. W. Desrosier
Contra Costa County—
Dr. Chas. R. Blake------Richmond
Antioch-------------Dr. W. S. George
Concord-----------------Dr. F. F. Neff
El Cerrito--------------Dr. J. F. Diddle
Hercules------------Dr. C. T. Wetmore
Martinez---------Dr. Edwin Merrithew
Pinole------------Dr. M. L. Fernandez
Pittsburg--------------Dr. H. E. Peters
Richmond------------Dr. Chas. R. Blake
Walnut Creek-----------Dr. C. R. Leech
Del Norte County—
Dr. E. M. Fine-------Crescent City
Crescent City-----------Dr. E. M. Fine
El Dorado County—
Dr. S. H. Rantz---------Placerville
Placerville----------------------P. J. Hall
Fresno County—
Dr. G. L. Long-------------Fresno
Clovis--------------Dr. M. S. McMurtry
Coalinga-----------Dr. C. W. Hutchinson
Firebaugh-----------------E. C. McWayne
Fowler--------------------Chas. Chapman
Fresno--------------Dr. C. Mathewson
Kingsburg----------------Dr. T. D. Smith
Reedley-------------Dr. Chas. H. Traber
Sanger-------------------——— ———
Selma----------------Dr. Fred H. Williams
Glenn County—
Dr. Etta S. Lund------------**Willows**
Orland------------------Dr. S. Iglick
Willows-------------Dr. W. H. Walker
Humboldt County—
Dr. Carl T. Wallace---------Eureka
Arcata-------------Dr. G. W. McKinnon
Blue Lake--------------Dr. Earl W. Hill
Eureka-------------------Dr. L. A. Wing
Ferndale-----------------Dr. J. J. Myers
Fortuna------------Dr. Orville Rockwell
Imperial County—
Dr. L. C. House-----------El Centro
Brawley----------Dr. Eugene Le Baron
Calexico---------------Dr. M. L. Parcels
El Centro------------Dr. W. F. Peterson
Holtville--------------------C. L. Gillett
Imperial-----------------R. M. Thompson

Inyo County—
Dr. H. W. Cook-----------Big Pine
Bishop------------------Dr. D. M. Nicoll
Kern County—
Dr. C. A. Morris--------Bakersfield
Bakersfield----------------Dr. P. J. Cuneo
Delano-----------------Dr. J. R. Hicks
Maricopa-------------Dr. H. N. Taylor
McKittrick---------Dr. Robert C. Dear
Taft----------------------Dr. M. W. Pascoe
Tehachapi--------------Dr. E. F. O'Reilly
Kings County—
Dr. C. L. Scott-----------Hanford
Corcoran--------------Dr. L. O. Henrich
Hanford---------------Dr. A. S. Torrens
Lemoore------------Dr. Blake Franklin
Lake County—
Dr. A. N. Craig---------Kelseyville
Lakeport----------------——— ———
Lassen County—
——— ———-----------Susanville
Susanville---------------Mrs. Ralph Hart
Los Angeles County—
Dr. J. L. Pomeroy-----Los Angeles
Alhambra-------------Dr. F. E. Corey
Arcadia--------------------F. W. Treen
Avalon-----------------Dr. J. J. Peckham
Azusa-------------Mrs. Nettie Dingman
Beverly Hills-------------Dr. J. R. Perry
Burbank-----Dr. Frederick M. Rossiter
Claremont----------------Dr. J. I. Latimer
Compton--------------------E. E. Elliott
Covina ------------------Dr. J. A. Lepley
Culver City--------Dr. W. F. Mortensen
Eagle Rock-------------Dr. C. H. Phinney
El Monte------------------Dr. B. B. Bolton
El Segundo----------------------R. F. Davis
Glendale-----------------Dr. R. E. Chase
Glendora--------------Dr. J. L. Pomeroy
Hermosa Beach------------------B. F. Brown
Huntington Park-Dr. Thos. J. DeVaughn
Inglewood--------------Dr. C. M. Graham
La Verne----------------Dr. J. E. Hubble
Long Beach--------------Dr. R. L. Taylor
Los Angeles-------------Dr. L. M. Powers
Manhattan Beach------Llewellyn Price
Monrovia-----------Dr. Chas. D. Gaylord
Monterey Park------Dr. J. S. Trewhella
Pasadena-----------------Dr. J. S. Hibben
Pomona----------------------Dr. N. J. Rice
Redondo Beach------Dr. A. C. Hendree
San Fernando-----Dr. John M. Griffiths
San Gabriel------Dr. Wm. W. Worster
San Marino------Dr. W. LeMoyne Wills
Santa Monica-----------Dr. F. J. Wagner
Sierra Madre--------Mrs. Amelia Jensen
South Pasadena------Dr. C. F. Metcalf
Venice---------------------Dr. I. L. Magee
Vernon---------------------Dr. L. J. Williams
Watts------------------------Dr. J. L. Lamb
Whittier------------------Dr. D. E. Knight
Madera County—
Dr. J. L. Butin-------------Madera
Madera--------------------Dr. J. L. Butin
Marin County—
Dr. J. H. Kuser--------------Novato
Belvedere-------------Dr. Florence Scott
Corte Madera------------------A. F. Roberts
Larkspur---------------------**Dr. L. Newman**
Mill Valley-----Theodore B. Thorndike
Ross----------------------Dr. Thos. U. Smith
San Anselmo-----------Dr. O. W. Jones
San Rafael--------------Dr. W. F. Jones
Sausalito ----------------——— ———
Mariposa County—
Dr. E. S. Scott-----------Mariposa

LIST OF COUNTY AND CITY HEALTH OFFICERS—Continued.

Mendocino County—
Dr. S. L. Rea--------------Ukiah
Fort Bragg------Dr. Harper Peddicord
Point Arena--------------Conrad Nicks
Potter Valley--------------W. T. Eddie
Ukiah----------Dr. Lew K. Van Allen
Willits-----------------Dr. F. G. Gunn
Merced County—
Dr. C. H. Castle------------Merced
Gustine--------------Dr. C. E. Stagner
Los Banos-------------Dr. R. Jadarola
Merced----------------Dr. W. E. Lilley
Modoc County—
Dr. John Stile--------------Alturas
Alturas-----------------Dr. John Stile
Mono County—
——— ———-----------Bridgeport
Monterey County—
Dr. J. A. Beck------------Salinas
Carmel-by-the-Sea---------W. T. Kibler
King City---------Mrs. R. H. Brunette
Monterey--------------------Peter Sella
Pacific Grove-----------James P. Evans
Salinas-----------------W. E. Hallock
Napa County—
Dr. O. T. Schulze------------Napa
Calistoga--------------Harry Von Arx
Napa---------------------E. L. Geiger
St. Helena-----------Wynn M. Powers
Nevada County—
Dr. Frank S. Baxter--Grass Valley
Grass Valley------Dr. Frank S. Baxter
Nevada City-----------Geo. H. Calanan
Orange County—
Dr. Arthur H. Domann--Santa Ana
Anaheim-------------Dr. J. W. Truxaw
Brea------------------------——— ———
Fullerton----------------Dr. J. H. Lang
Huntington Beach-------Dr. G. A. Shank
Newport Beach---------------J. A. Porter
Orange----------------Dr. J. C. Crawford
Santa Ana----------------Dr. J. I. Clark
Seal Beach----------Dr. J. Park Dougall
Stanton-------------------Dr. J. H. Swan
Placer County—
Dr. John Manson------------Lincoln
Auburn-------------Dr. Theodore Snypp
Colfax-----------------Dr. H. N. Miner
Lincoln------------------------F. R. Elder
Rocklin----------------John H. Gregory
Roseville---------------------G. W. Lohse
Plumas County—
Dr. M. B. Bolton-------------Quincy
Riverside County—
Dr. James G. Baird------Riverside
Banning----------------------——— ———
Beaumont------------------Dr. F. D. West
Blythe--------------Dr. W. H. Chapman
Corona-------------------Dr. W. S. Davis
Elsinore-----------------Dr. G. E. Shank
Hemet---------------------Dr. H. O. Miller
Perris------------------------——— ———
Riverside--------------Dr. W. B. Wells
San Jacinto-------------------Will H. Gray
Sacramento County—
Dr. J. H. Leimbach---------Isleton
Sacramento--------------Dr. W. J. Hanna
San Benito County—
Dr. J. M. O'Donnell-------Hollister
Hollister-------------Dr. J. M. O'Donnell
San Juan-------------------W. S. Hayden
San Bernardino County—
——— ———------San Bernardino
Chino------------------------Dr. Elgar Reed
Colton-------------------Dr. C. F. Whitmer
Needles-----------------Dr. A. S. Parker
Ontario---------Dr. Calvert L. Emmons
Redlands---------Dr. Wm. A. Taltavall
Rialto--------------------Dr. L. P. Barbour
San Bernardino-------Dr. F. M. Gardner
Upland-----------------------E. R. Bowman

San Diego County—
Dr. Carl S. Owen---------San Diego
Chula Vista------------------——— ———
Coronado--------------Dr. Raffael Lorini
East San Diego------Dr. C. R. Carpenter
El Cajon----------------------——— ———
Escondido------------------Dr. B. L. Crise
La Mesa------------------Dr. A. D. Marks
National City-----Dr. Theo. F. Johnson
Oceanside--------------------Dr. R. S. Reid
San Diego----Dr. E. P. Chartres-Martin
San Francisco (city and county)—
Dr. W. C. Hassler----San Francisco
San Joaquin County—
Dr. John T. Davison--------Stockton
Lodi--------------------Dr. S. W. Hopkins
Manteca--------------------James H. Rogers
Stockton--------------Dr. Minerva Goodman
Tracy---------------------Dr. Allen R. Powers
San Luis Obispo County—
Dr. C. J. McGovern---San Luis Obispo
Arroyo Grande---------Dr. H. S. Brown
Paso Robles----------------W. W. Hughes
San Luis Obispo-------------W. F. Cook
San Mateo County—
Dr. F. Holmes Smith----San Bruno
Burlingame-----Dr. Jane H. Parkhurst
Daly City----------------Dr. A. H. Rankin
Hillsborough------------------C. M. Hirschey
Redwood City-------------Dr. J. E. Chapin
San Bruno--------------Dr. F. Holmes Smith
San Mateo-----------------Dr. W. C. McLean
So. San Francisco---Dr. J. C. McGovern
Santa Barbara County—
Dr. G. S. Loveren---Santa Barbara
Lompoc--------------Dr. C. B. Constable
Santa Barbara--------------Geo. H. Hicks
Santa Maria------------Dr. O. P. Paulding
Santa Cruz County—
Dr. Wm. H. Keck-------Santa Cruz
Santa Cruz--------------Dr. A. N. Nittler
Watsonville--------------Dr. A. W. Bixby
Santa Clara County—
Dr. Wm. Simpson----------San Jose
Alviso----------------------------Alice Davee
Gilroy--------------------Dr. J. W. Thayer
Los Gatos----------------Dr. R. S. Anthony
Mayfield-----------------------Joseph Ponce
Morgan Hill-----------------Dr. W. D. Miner
Mountain View--Dr. A. H. MacFarlane
Palo Alto-----------------------Louis Olson
San Jose--------------Dr. James B. Bullitt
Santa Clara-------------Dr. G. W. Fowler
Sunnyvale--------------Dr. H. H. Sheffield
Shasta County—
Dr. S. T. White------------Redding
Kennett----------------Dr. J. P. Sandholt
Redding----------------------E. A. Rolison
Sierra County—
Dr. O. A. Eckhardt-----Downieville
Loyalton--------------------Dr. L. G. Ede
Siskiyou County—
Dr. H. S. Warren----------Montague
Dorris------------------------Otha A. Wilkins
Dunsmuir----------------Herman Woodward
Etna-------------------------Dr. W. H. Haines
Fort Jones-------------------------T. J. Wayne
Montague-------------------Hugh W. French
Sisson------------------------Dr. Paul Wright
Yreka-----------------------Dr. W. F. Shaw
Solano County—
Dr. W. C. Jenney----------Vacaville
Benicia------------------------Dr. P. B. Fry
Dixon----------------------------H. G. Grove
Fairfield------------------------F. L. Morrill
Rio Vista------------------------Geo. Adcock
Suisun-----------------------Dr. A. G. Bailey
Vacaville-------------------------W. F. Hughes
Vallejo---------------------Dr. E. A. Peterson

LIST OF COUNTY AND CITY HEALTH OFFICERS—Continued.

Sonoma County—
Dr. F. O. Pryor------------Santa Rosa
Cloverdale--------------E. E. Gibbins
Healdsburg----------Dr. J. W. Seawell
Petaluma-----------Dr. R. B. Duncan
Santa Rosa-----------Dr. R. M. Bonar
Sebastopol------------Dr. W. J. Kerr
Sonoma--------------J. H. Albertson

Stanislaus County—
Dr. J. L. Hennemuth-----Modesto
Modesto-------------Dr. J. W. Ransom
Newman----------Dr. H. V. Armistead
Oakdale-------------Dr. E. R. Clarke
Turlock-------------Dr. C. E. Fearson

Sutter County—
Dr. W. L. Stephens-------Meridian
Yuba City--------------Dr. J. H. Barr

Tehama County—
Dr. E. E. Thompson-----Red Bluff
Corning------------Dr. Caroline Howes
Red Bluff----------Dr. Walter Gavey
Tehama-------------Dr. J. H. Belyea

Trinity County—
Dr. C. A. Curl---------Weaverville

Tulare County—
Dr. A. W. Preston---------Visalia
Dinuba---------------Dr. A. N. Loper
Exeter---------------Dr. W. R. Tyler
Lindsay--------------Dr. C. W. Locke
Porterville-----------Dr. O. C. Higgins
Tulare---------------Dr. J. B. Rosson
Visalia--------------Dr. A. W. Preston

Tuolumne County—
Dr. Wm. L. Hood----------Sonora
Sonora--------------Dr. Wm. L. Hood

Ventura County—
Dr. A. A. Maulhardt------Oxnard
Fillmore----------Dr. Will R. Manning
Oxnard------------Dr. G. A. Broughton
Ventura------------------R. E. Brakey
Santa Paula-----------Dr. G. C. Nichols

Yolo County—
Dr. W. J. Blevins--------Woodland
Davis----------------Dr. W. E. Bates
Winters------------------C. M. Norton
Woodland---------------Alice G. Thomas

Yuba County—
Dr. J. H. Barr----------Marysville
Marysville------------Dr. A. L. Miller
Wheatland-------------W. H. Niemeyer

43499 2-19 5,500

List of Diseases Reportable by Law

- Anthrax
- Beri-beri
- Cerebrospinal Meningitis (Epidemic)
- Chickenpox
- Cholera, Asiatic
- Dengue
- Diphtheria
- Dysentery
- Erysipelas
- German Measles
- Glanders
- *Gonococcus Infection
- Hookworm
- Leprosy
- Malaria
- Measles
- Mumps
- Ophthalmia Neonatorum
- Paratyphoid Fever
- Pellagra
- Plague
- Pneumonia (Lobar)
- Poliomyelitis
- Rabies
- Rocky Mountain Spotted (or Tick) Fever
- Scarlet Fever
- Smallpox
- *Syphilis
- Tetanus
- Trachoma
- Tuberculosis
- Typhoid Fever
- Typhus Fever
- Whooping-cough
- Yellow Fever

*Reported by office number. Name and address not required.

Quarantinable Diseases

- Cerebrospinal Meningitis (Epidemic)
- Cholera, Asiatic
- Diphtheria
- Leprosy
- Plague
- Poliomyelitis
- Scarlet Fever
- Smallpox
- Typhus Fever
- Yellow Fever

Section 16, Public Health Act. All physicians, nurses, clergymen, attendants, owners, proprietors, managers, employees, and persons living in or visiting any sick person in any hotel, lodging house, house, building, office, structure, or other place where any person shall be ill of any infectious, contagious, or communicable disease, shall promptly report such fact to the county, city and county, city, or other local health board or health officer, together with the name of the person, if known, and place where such person is confined, and nature of the disease, if known.

HEALTH OF WORKERS IMPORTANT

The health of workers in shipyards is of no less importance today than it was before the armistice was signed. Nor is the health of soldiers, sailors and civilians of less importance now than heretofore. The acute crisis of war is past but, at the present time and during later reconstruction periods the demand will be for the highest type of physical fitness in every American. Each worker has an individual responsibility in keeping himself fit for the upbuilding of America and every governmental unit must provide all possible machinery to help maintain the public health.

SAN FRANCISCO, CAL.
LIBRARY OF THE
UNIVERSITY OF CALIFORNIA
MEDICAL SCHOOL,
2ND & PARNASSUS AVE, S.F.